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CONTENTS

A STUDY OF THE KIND OF GEOGRAPHY TAUGHT IN SECONDARY MODERN SCHOOLS

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1. Introduction

The object of this study was to obtain data about the kind of geography taught in secondary modern schools. The information analysed here came from 56 teachers in such schools within the area of one local education authority. All were teaching considerable amounts of geography. Some were full time specialists, and most were spending more than half their time on the subject. One at least was an honours graduate with post-graduate training, several were "emergency trained", and the remainder were from what are now three-year training colleges. The whole age-range of teachers was represented. They were drawn from the whole of the area, which included a large built-up area in the outer part of a great town, some smaller towns, and rural areas.

Each teacher was asked to set an examination paper, in the following terms: "Will you be good enough to draw up a test or examination to occupy pupils aged 15 years for not more than an hour? The test should be devised to give (in any way you think fit) a fair indication of what these school leavers have learnt and what they can do in geography."

Most were long and carefully written documents, involving considerable thought. It was clear that most papers were written for a particular school. It is significant that no teacher took the wider view, and offered a test of universal application. Only four papers consisted solely of essay-type questions; another nine were little more than this. The remainder were of varying length, many of them being broken down into detailed sub-sections. There were many composed of 20 to 50 short questions, which could be answered in a word, phrase or sentence.

The intention behind the request was to discover the teachers' conception of what a child should know in the subject at the end of

TABLE 1

ANALYSIS OF CONTENT: SUMMARY

	Mapwork	*Local*	*Mathematical*	*Physical*	*Regional British Isles*	*General World*	*Other Regional*	*Natural Regions*	*Total World*	*Non-geographical*
Total schools questioning this subject	19	32	18	36	47	51	34	23	55	17
Range of marks allotted (%)	3–68	5–40	2–50	2–35	5–61	9–80	2–68	2–35	15–95	3–44
Average mark allotted (by all schools)	5·6	10·3	3·1	7·5	23·0	28·2	13·3	4·3	46·2	4·4

TABLE 2

ANALYSIS OF CONTENT: RANGE OF MARKS ALLOTTED

	Mapwork	*Local*	*Mathematical*	*Physical*	*Regional British Isles*	*General World*	*Other Regional*	*Natural Regions*	*Total World*	*Non-geographical*
0	37	24	38	20	9	5	22	33	1	39
1–10	8	8	14	21	2	2	7	16	0	9
11–20	8	12	2	10	13	14	10	4	3	5
21–30	1	9	1	3	15	13	9	2	6	1
31–40		3		2	11	10	6	1	11	1
41–50	1		1		4	4	1		15	1
51–60					1	4			9	
61–70	1				1	3	1		6	
71–80						1			4	
81–90									1	
91–100										

EDUCATIONAL REVIEW

Journal of the Institute of Education, University of Birmingham

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PROGRAMMED LEARNING ISSUE: FEBRUARY, 1964.

The February issue of the *Review* will be devoted to programmed learning; this will be among the first collection of research papers on programming to be published in the United Kingdom. The subjects will probably include science, English (sentence structure and spelling), geography, mathematics, Latin and chess.

SPECIAL SUPPLEMENT

In addition a supplement, *Handbook of Programmed Learning*, will be published at the same time at a very low price. This will be one of the first guides to programming technique to be published over here. It will be concerned with the educational implications of programming, relevant learning theory, and the writing and appraisal of programmes, with practical examples. It will contain a detailed annotated bibliography of programmes and books on programming.

Both will be produced by the Birmingham University Education Department research unit, under Professor E. A. Peel, which has recently been awarded a Ministry of Education grant for fundamental research into programming.

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the school course. Clearly the subject-matter examined was strongly influenced by the syllabus in use at each school, but this was modified by the teachers' views on the relative importance of different parts of it. The teachers' outlook on the subject, as shown by the types of question set, is a much more individual matter, and is also analysed here.

The allotment of marks to each question was used as the basis of analysis. In many cases a mark allotment was given, in others it was obvious. For the remainder, a marking scheme was devised for each paper, having regard to the amount of work involved in each question.

2. Content

The papers were first analysed to discover the factual material examined. The following divisions of subject matter were taken, and in practice there were few questions or parts of questions which did not fit one of these classifications, and there were few questions, if any, which needed inclusion in two groups.

M. Mapwork divorced from reality, such as contour maps of imaginary islands or of abstract land forms.

L. Local work, i.e. the study of the district near the school, including mapwork on the school locality or the local Ordnance Survey sheet. This sometimes included local physical geography.

E. Mathematical geography, mainly on earth movements, day and night, the seasons, latitude and longitude.

P. Physical geography, mainly land forms and climate.

B.I. Regional geography of the British Isles.

W.G. General topics of world geography, often factual knowledge of places and commodities.

W.R. Regional geography other than the British Isles.

N.R. World natural regions, e.g. tundra, equatorial forests.

N. Non-geographical questions.

The following questions are given as examples of each division:

M. "Draw a 4″ square to represent the frame of a map. Underneath, draw an open divided scale of 1″ to 1 mile. Draw an estuary with the name NEWTOWN at the lowest bridging point which is also the limit to which tides flow. The town is served by a railway with a double

track at a principal station and it then continues near the coast. A main road A136 reaches the town by a bridge over the railway. The following also appear on the map: electricity transmission lines, church with tower, L.W.M., and a foreshore with sand and mud."

A common variant of this was a duplicated contour map of an island, with simple questions on heights and slopes.

L. "On the triangle of Crosshill roads, sketch in the School, Churches, Post Office, and Shops. Use a key.
Mention as many ways of earning a living near Crosshill as you can. Explain why each job can be carried on here, and how climate, soil, and railways etc., help or hinder these industries.
Describe the climate, soil, position, size and machinery used of any Nursery you know. Name the plants grown.
Write an essay on 'The history and growth of Crosshill'."

This was typical of the better questions on local geography.

E. "Name the two movements of the earth. What do they cause?
What is meant by latitude?
What is meant by longitude?"

P. "By means of diagrams, show the following:
Cross-section of folded mountains, cross-section of rift valley, delta, contours, oxbow lake."

B.I. These questions conformed fairly closely to the following type:

"Write in the following towns on the map: London, Cardiff, Liverpool, Glasgow, Southampton. (An outline map of the British Isles was provided.) Show them by putting a small circle (o) and the initial.
Shade in the South Wales coalfield.
Name 3 industries connected with the use of coal which are likely to be done on the coalfield.
Give 4 reasons why Lancashire is an important cotton manufacturing region."

W.G. These questions showed a very wide range of style and content. The marking of simple facts and places on a world outline

map was very common. 32 papers included such a map. The following questions are typical of those not requiring mapwork.

"Name two countries or regions from which we import the following: Meat, dairy-produce, wheat, tea, coffee, wool, cotton, rubber, oil, soft-wood.
Write short paragraphs on any two of the commodities mentioned in question 1."

W.R. These again were very varied. The following are representative.

"Answer one question from this section.
1. Norway has a very small population. Explain why.
2. Make a careful list of the exports and imports of Norway and name the chief ports.
3. Imagine you live at the head of a fiord. Describe what life would be like. Include the work, amusements, travel, etc.

Either, write a short account of a journey across any European country. Describe your route and what you would see;
Or, imagine that you intend to emigrate to one of the countries in the British Commonwealth. Give an account of the life you would expect to lead there.

What crops in India depend on the coming of the 'Monsoon'? Explain the meaning of monsoon, and when does it arrive."

N.R. "Pretend you are living in one of the regions mentioned below: The Cold Forests of North America, the Prairie, the Grasslands of Brazil, California, the Forests of Africa, the East Indies, the Great Australian Desert. Describe the kind of work you would do and how you may spend your spare time."

The subject-matter of the papers, as set out in Tables 1 and 2 would appear to indicate the content of the geography taught in these schools, and, more important, what the teachers expected the children to remember of what they had been taught. Although there are peculiar variations at the extremes, a recognisable pattern emerges. The salient points are as follows:

1. 51/56 schools studied world general geography, often in large quantities. For the schools which examined this, 31% was the average allotment of marks, and the average for all 56 was 28%. Much of the knowledge expected consisted of simple facts. It should be noted also that the classification "world natural regions" is closely related, in that the subject-matter is usually reviewed on a world basis. With this included, the number of schools rises to 53, and the mark allotment from 31% to 35%.

2. 47/56 schools studied the British Isles, allotting on the average 27% to this. The average for all 56 was 23%. Much of this work appeared to have been on a regional basis, involving some knowledge of detail of various parts of this country. The quality of these questions was decidedly higher than that of the general questions. Regional appreciation and causal relationships were more frequently required.

3. The classification "world regions" is not very illuminating, except that the substantial number, 22/56, who did not examine other countries specifically, confirms that there was somewhat scanty attention paid to regional work outside the British Isles.

4. Mathematical and physical geography did not receive much attention. It is understandable that not many marks should be allotted to mathematical geography, which at this level could be reasonably expected to consist of a few elementary facts, which could not bulk largely in an examination paper. The low emphasis on physical geography is to be noted.

5. 19/56 schools approached mapwork in an abstract manner, divorced from any specific locality or example. One paper, which had quite a large section on local work, had an additional question on mapping divorced from any specific locality.

6. 32/56 schools studied some local geography, and in a few cases quite substantial work was done. In 10 papers one quarter or more of the paper was devoted to this.

7. 17/56 contained questions classified as non-geographical and the very existence of such questions is indicative of the attitude or knowledge of some teachers. Properly to define what was taken as non-geographical would involve a definition of geography. A more concrete, if less positive, statement of the criterion for this category is that its subject-matter fell much more clearly into other recognised subject fields, particularly the physical sciences, economics and politics. There were also a few questions which were trivial, or on miscellaneous general knowledge. This material fell into four main

groups: elementary economics, industrial and other processes, current affairs, chiefly international problems, and the political status of parts of the Commonwealth.

3. Outlook

Mapwork

The papers were next analysed to discover something of the attitude or outlook of the questioners towards the subject in school, as indicated by the style of their questions. The place of mapwork in geography is clearly important, and the results are shown in Tables 3, 4 and 5. The following classification was made, which covered every type of map question set.

TABLE 3

Analysis of Outlook: Summary

	Mapwork	*Reasoning*	*Understanding*	*Description*	*Regional*
Total schools questioning this aspect	48	40	32	12	19
Range of marks allotted (%)	4–68	2–62	2–40	3–19	2–25
Average mark allotted (by all schools)	25·6	13·6	7·0	2·3	3·5

TABLE 4

Analysis of Outlook: Range of Marks Allotted

	Mapwork	*Reasoning*	*Understanding*	*Description*	*Regional*
0	8	16	24	44	37
1–10	8	12	20	6	12
11–20	6	13	7	6	5
21–30	14	9	3		2
31–40	11	4	2		
41–50	2				
51–60	4				
61–70	3	2			

TABLE 5

ANALYSIS OF OUTLOOK: TYPES OF MAPWORK AND RANGE OF MARKS ALLOTTED

	Local Ordnance	*Local Sketch*	*Imaginary*	*S.E. England*	*Outline British Isles*	*Outline World*	*Outline Others*
0	50	46	47	51	34	25	49
1–10	4	4	4	3	9	4	3
11–20	1	5	3	1	7	15	3
21–30		1	2	1	2	9	1
31–40	1				4	2	
41–50							
51–60						1	

A. Local Ordnance Survey map. The questions were usually on the local 1″ sheet, a copy of which was to be available to each child.

B. Local sketch maps. These questions usually required the child to draw a sketch map of an area known to him, either his home or school area.

C. Imaginary maps. These questions required the child to draw or study contour maps of invented areas, or to make up a map of an imaginary piece of countryside, using Ordnance Survey symbols.

D. Maps of South-east England.

E. Outline maps of British Isles.

F. Outline maps of the World.

G. Outline maps of other countries.

In nearly every case, in groups D to G, an outline map was provided, on which various facts were to be marked. Occasionally the children were asked to draw their own for D, E and G.

Again a clear tendency emerges. 31/56 used a world outline map, allotting marks from 4% to 51%; 22/56 used an outline of the British Isles, allotting marks from 4% to 33%, and 42/56 used one or both of these. The other categories received little stress. Nearly all the questions on the outline maps required only the marking in or identification of the simplest facts: towns, mountains, rivers, countries, seas, and, less often, products. Rarely were children asked to mark in an area, e.g. of the production of a commodity, vegetation, or rainfall. The outline maps of other countries were used in only seven papers, and usually the children were asked to draw these

themselves. The maps of south-east England usually required the children to sketch in themselves various facts.

The importance given to sketch maps was remarkably low, although this is considered by many to be peculiar and vital to the subject. Their importance is implied by their appearance, often in large numbers, in school text-books and other works. Taylor's (1) work is an outstanding early example.

Of the 32 papers which indicated some interest in local geography, nine required sketch maps of the locality to be drawn, and most of these stated the facts required. One supplied a sketch map of the area on the blackboard, and required the children to draw conclusions from it.

Four papers gave general advice in the rubric that sketch maps should be drawn, and only eight questions asked specifically for an illustrative sketch map as part of the answer. Only two questions of all those submitted required a sketch map as a whole answer, apart from those on the locality, and one of these specified the detail required. The only one which required original thinking was: "Draw sketch maps to explain the following: 1. London is a route centre. 2. Reading is a gap town." There is, of course, as in all questions of this kind, no proof that the children had not learnt the appropriate answer by rote, and could thus reproduce it without understanding. Six papers asked for diagrams to be drawn, often of land forms, e.g. rift valleys, volcanoes, deltas.

There was little attention paid to the use of the atlas. This is understandable, as it is an unusual examination technique. Two papers included questions which involved reference to an atlas, and two questions asked for an explanation of how to use one.

It is worth noting that only six papers called for the use of the local Ordnance Survey map, though its use is nowadays advocated (2). Some study of such maps was indicated in group C (imaginary maps) but the questions here asked for rote knowledge of the symbols, rather than understanding of map interpretation or knowledge of a specific area.

Eight papers required no map work at all.

Reasoning

The papers were next analysed to discover the amount of reasoning required. The questions which required reasoning usually used the words "explain", "why", "show how" or "give reasons for". Questions requiring children to compare two places or ways of life

were included as requiring some degree of orderly independent thought. These questions were very rare. Questions requiring explanations of the movements of the earth, day and night, and so on, were excluded as being primarily mathematical in nature. There were few of these. "Explain the following terms: delta, tundra, etc." was also excluded, as calling for description rather than reasoning.

Where a question called for some fact and some reasoning, an estimate of the proportion of marks to be allotted to each part was made. Children were often given a choice from questions, some of which required facts and some reasons. In this analysis, the amount of stress the teacher was giving to reasoning was sought, and the allotment was made accordingly.

Questions which escaped this analysis were a very few special questions, not included in the main analysis, which were devised for particular pupils who had been working on a long term individual topic by private study. These questions sometimes asked "Why did you choose ..... for your special subject?" or "How did you find out about .....?"

The amount of reasoning required, as defined here, is remarkably low. The average score of all 56 papers is 13·6%, and of those 40 which called for any at all, 19%. It can be seen that with the exception of some special questions difficult to classify, certain forms of map work, mainly on contour lines, and the small amounts of mathematical geography, the questions called largely for factual knowledge only. The commonest forms of question were "Name .....", "State .....", "Mark on the map ....." and "Describe .....". Only two papers reached a high total percentage, with 62% each.

By this stage in the analysis, it was becoming apparent that certain aspects of geographical thinking were ignored or neglected by the teachers, and the next three analyses were devised to obtain some numerical scoring of them.

Understanding of Other Ways of Life

It is frequently claimed that geography gives children an understanding of other people, by studying their ways of life. This is implied in the writings of Fairgrieve (3), Garnett (4) and many others. It is at present commonly offered as a justification for teaching the subject. The papers were therefore analysed to find questions which called for an understanding or knowledge of ways of life other than that in the locality. The clearest version of this is the question which directly relates a way of life to environment, for

example: "Show how the life of the Italians is affected by the geography of the country", but such direct questions were very rare. Any question or part of a question which asked for information about how specific people live was credited, and also questions which asked for comparison of the lives of different peoples. The idea of understanding was allowed for generously, so that the figures given represent all possible weight given to this topic by the teachers. Thus questions which required some detailed knowledge of leading occupations, or typical industries, of other regions, were allowed, as being indicative that there was some element in the teacher's mind of teaching appreciation of other ways of life. This increased the score under this heading considerably.

Description

Again geography is a descriptive subject, and Fairgrieve's (5) famous dictum on the function of geography is relevant, and sufficient authority, here. "The function of geography is to train future citizens to imagine accurately the conditions of the great world stage, and so help them to think sanely about political and social problems in the world around."

The questions were therefore next analysed to find the stress laid on imagination of other places, or descriptions of what they would really be like. Thus "Imagine you were in ....." or "Describe what you would see if you were in ....." are the best examples of this type of question. The question form "Describe the geography of ..... under the following headings ....." was not allowed. This form of answer calls for a factual answer about relief, climate, vegetation, and so on, which implies little or no realisation of what the area is actually like.

Closely allied to the idea of accurate visualisation is the teaching of detailed knowledge of other specific places. Teachers who teach about particular small places were considered to have in mind the importance of reality and of accurate visualisation by the children. The development of the sample study method (6) (7) is some indication of the importance placed on this aspect of geography. Questions requiring this type of information were therefore also included in this class, for example: "Choose one of the following: a farming family in North China, a family in a village in India, a family on the Canadian Prairie, a West African farming family. Write about their home, their clothes, their food, and their work."

Regional Thinking

The attitude of the teachers to regional thinking was also investigated. There is a vast literature on the regional approach in geography. The writings of Herbertson, Mackinder, and to-day Gilbert and Bowen, are indicative of the attitude of the British school to this aspect of the subject. Questions which were merely on a regional basis were not included, for example "Give an account of South-east England under the following headings .....", though they were not numerous anyway. The criterion for inclusion in this analysis was that the question should be so framed as to require the child to select for himself particular aspects of a region, to appreciate its characteristics, or to synthesise the elements in its geography. Thus a question which required a child to explain the growth and importance of London was considered to require him, among other things, to think regionally about, and to synthesise elements in, the geography of the Thames Basin and South-east England.

It might be noted here that the short answer questions set by many teachers, which require brief factual replies, do not favour the examining of this aspect of geography. It could possibly be examined by multiple-choice questions, but these would require elaborate preparation and a knowledge of technique of which the majority of these teachers were almost certainly unaware. At present in schools in this country regional geography is almost entirely examined by essay-type questions. It may be that the teachers considered these children unable to write the continuous reasoned passages which are required, but in view of their general tendency towards examining purely factual knowledge, it seems likely that, apart from problems of the form of the examination, they do not stress this aspect of the regional approach to the subject.

The results of the last three analyses are set out in the tables. Little further comment is needed. Reasoning and understanding of other ways of life seem the least neglected, though even here 16 and 24 papers respectively did not require any. The neglect of descriptive or imaginative work is quite remarkable, in view of the stress such an authority as Fairgrieve placed on it. The low score of the regional aspect, as defined here, is understandable, in that it requires the highest degree of independent and original thought, and the children concerned were not the ablest in the whole community.

There remain two questions worthy of consideration by themselves. There was only one question set which, by itself, directly tested the children's general appreciation and understanding of

geography, and this was set by the honours graduate in the subject. It was: "Explain briefly what is geography and why we learn it at school." It is significant of the attitude of the others that they did not consider this broader aspect of the subject, and reflects again their tendency to look for specific facts rather than wider concepts.

The other question was the only one which involved the use of a picture. Each child was to be given two pictures, taken from the pamphlets published by the British Broadcasting Corporation to accompany their broadcast lessons. One was of a small hilltop village in Apulia, the other was a scene in its market place. The accompanying text was obliterated. The question was: "Examine the two pictures taken in the same country. Identify the country (or climatic region) and give at least two reasons for your answer." Pictures have been set for several years at the Ordinary Level examination in geography of the General Certificate of Education, and there is no lack of pictorial material nowadays, but it occurred to only one teacher to use this method.

4. Conclusion

From the information obtained from these analyses, the following points are summarised. There was very little evidence of independent study by children of selected special topics. There was little evidence of detailed study of places, other than of the home district and, to a less extent, of the British Isles. There was little evidence of questions framed to appeal to the children, though some required imagination. There was some indication that teaching about current affairs and world problems was included in geography lessons. There was only one picture used, and only one question which viewed the subject itself. There was indicated a great range in the knowledge and understanding of the subject on the part of the teachers. There was sufficient repetition of one form of content to suggest that this could be considered the norm. This was basically the study of the local area (up to 25%), the British Isles (25%) and very general cover of the rest of the world (50%). Adequate attention appears to be given to elementary skills in connexion with maps. There were grounds for thinking that the teachers believed the children's ability to reason was low. There was an abundance of factual knowledge required, and a paucity of thought. The type of mapwork demanded was consistent with this last statement.

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EXPERIMENTAL MARKING OF ENGLISH COMPOSITIONS WRITTEN BY FIFTEEN-YEAR-OLDS

by JAMES BRITTON

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I The Experiment

Wiseman's method (1) of marking English compositions has been widely used for a number of years at 11 + selection examinations. Four examiners are asked to give a rapid general impression mark (out of 20) to each composition and the candidate's mark is the sum of the four (after adjustment for age if necessary). Differences between examiners' marks are not regarded as detrimental; it is essential on the other hand that the markers should be self-consistent, as judged by a mark/re-mark test. A correlation of ·7 or over is considered satisfactory.

This method appeals in theory because it makes allowance for a subjective element in the processes of writing compositions and assessing them. Other methods of assessing verbal ability have sought to minimise this element and in so doing have tended to remove from the test what is in the view of many teachers a vital and characteristic part of the ability itself. In Wiseman's method, the four assessments represent four personal interactions, four points of view so to speak which have on the face of it equal right to be considered.

An opportunity arose of experimentally applying Wiseman's method to the compositions written as part of the 1960 South-West Herts Certificate of Education (taken at fifteen by secondary modern school pupils) and comparing the results with the official results (2). Although work on the data is not fully completed, the main findings are reported here because of their possible bearing upon other English Language examinations.

It could not be assumed that Wiseman's method in its present form would satisfactorily deal with these compositions. At 11 + a candidate's educational potential is more important than his attainment (that is, in this case, his mastery of the mechanics of writing), and Wiseman's method takes account of this. An examination at

fifteen or later must, on the other hand, take into consideration attainment in the teachable skills in addition to achievement in the relatively unteachable but highly valued abilities such as originality, sensitivity, imagination. It was likely, moreover, that when multiple marking was applied to material of greater length and complexity, the gain, in terms of elimination of error, might be less than was found with the work of younger children.

The aim of the inquiry was to see whether the official marking of the compositions written in this examination could be improved upon by a practicable alternative along the lines laid down by Professor Wiseman.

The Sample. Teachers were asked to assess on a five point scale the ability in written English of the 692 candidates who, discounting one school which did not take part in the inquiry, took the Language Paper in the 1960 area certificate examination. These were used to draw a sample, representative by grades, of 168 candidates.

The Material. The area certificate Language Paper I (time allowed 1¼ hours) asks for two pieces of writing, one a letter, the other a composition. The composition was taken as the material for the inquiry. (Details are given as Appendix A.)

The Design. We made the assumption that the better marking of this one piece of writing would be that which more closely resembled a more broadly based assessment of the candidates' ability to write compositions. Thus the Pooled Assessment (i) was compared in turn with the Experimental Marking (ii) and the Official Marking (iii).

(i) *The Pooled Assessment.* We had five pieces of work from the candidates, in addition to the material of the experiment, and each piece was marked independently by two examiners, using their normal methods (i.e. ten examiners in all). Three of these pieces were compositions specially set in the schools towards the end of the summer term in which the area certificate had been taken. The fourth was the letter included in Language Paper I, and the fifth was an area certificate script in another subject (English Literature where possible, otherwise History or Geography) marked for English only. The total of these ten markings made up the Pooled Assessment.

(ii) *The Experimental Marking.* Eight other examiners (3) marked the material of the experiment (the area certificate compositions). They marked out of 20 by rapid general impression in accordance with the instructions shown at Appendix B. (They incorporate a good deal of Professor Wiseman's instructions to his markers.) Examiners subsequently re-marked 25% of the scripts.

One of the eight examiners was later asked to give a mark to each script for mechanical accuracy, basing it on the first 300 words, approximately. Bad spelling errors and errors in punctuation and sentence construction and grammatical usage were taken into account.

(iii) *The Official Marking* is that used in the area certificate examination. Scripts were marked once only by either of two examiners, using a broad schedule as follows:

Subject matter	20 marks
Arrangement, sentence construction, paragraphing, vocabulary	20 marks
Spelling, punctuation, handwriting	10 marks
(Total, Maximum	50 marks)

and the following guide regarding standards:

40 Excellent
35 Very Good
30 Good
25, 20 } Average
15 Below average
10 Weak
5 Very weak.

The marks of the second examiner (who took a minor share only) were scaled to bring mean and spread approximately into line.

II. The Principal Results

(*a*) *Correlations with the Pooled Assessment*

(i) The Official Marking ·71

(ii) A team of three experimental markers selected at random from the eight (C, D and G) ·76

(iii) This team with the Mechanical Accuracy mark added (C, D, G and M) ·79

(iv) A specially selected team of three experimental markers with the Mechanical Accuracy mark added (C, G, H and M) (see Section III(*b*) below) ·81

(*b*) *Reliability*

(i) Self-consistency of individual examiners is shown by the mark/re-mark correlations, which ranged from ·74 to ·95 (Average, ·84).

(ii) Self-consistency of the random team of experimental examiners (C, D and G) is shown by correlating their pooled first markings of the re-mark sample with their pooled re-marking. Result

is a coefficient of ·93 (compared with their individual mark/re-mark correlations of ·86, ·81 and ·84).

(iii) One aspect of the reliability of multiple marking may be indicated by comparing the pooled marks of one team with those of another. A second team of three was randomly selected (A, B and F) and their marks for the whole sample compared with those of the original team (C, D and G). The resulting coefficient, ·87, should be compared with the highest correlation between any two of these examiners taken individually, which is ·75, and the lowest, which is ·58.

The addition of the mark for mechanical accuracy (because it is relatively objective) would increase the reliability of these teams: if for the moment the mechanical accuracy mark were taken to be completely objective, the degree of agreement between the two teams could be indicated by correlating A, B, F and M with C, D, G and M to give a coefficient of ·91.

These figures have an obvious bearing upon the difference between parcelling out scripts to individual examiners and parcelling them out to teams of examiners.

(*c*) *Conclusion*

The results indicate that the compositions of fifteen-year-olds can be assessed as reliably by a combination of three impression marks and a mark for mechanical accuracy as the writing of eleven-year-olds can by Wiseman's original method (4).

They suggest that such an assessment is likely to be more valid than that obtained by current methods of marking by individual examiners. This last indication is, however, certainly not clear enough to convince an examining authority. The poor gain in validity, as shown by comparing the markings with the Pooled Assessment, may be due in part to the weakness of the Pooled Assessment as a criterion.

The method might usefully be further investigated by (i) setting up a criterion on the basis of periodic assessment over a year's work, and (ii) using for the experimental marking a longer piece of work by candidates of sixteen or over rather than fifteen.

III. Notes on Some Further Results

(*a*) The eight experimental markings were intercorrelated and analysed into factors by Thurstone's method. A large general factor accounted for 65% of the variance and two small bi-polar factors for 4% and 1% of the variance. Interpretation of these factors (if possible) waits upon the work described in (*b*) below.

Wiseman's method has perhaps been open to some criticism in that it accepted differences of opinion as valuable without further inquiry into the nature of these differences. Presumably some of them are more valuable than others and some might prove merely a distorting influence. The bi-polar factors are interesting for this reason.

(*b*) Standard deviations were calculated for each essay as marked by the eight experimental examiners and found to range from 0·59 to 3·93. Twenty-seven compositions had S.D. of 3 or over, and these, the compositions upon which the examiners most disagreed, were singled out for further study.

Examiners' marks for these 27 compositions were intercorrelated and analysed into factors, a method of bringing into prominence the bi-polar factors referred to in (*a*) above. The general factor was now reduced to 46% of the variance and the two bi-polar factors (after rotation) accounted for 10% of the variance each. An order of the essays representing as far as possible each of the bi-polar factors, occasional comments by markers on individual essays, and the markers' statements of their criteria in marking—these are the data available to assist interpretation. A good deal more work has to be done before any helpful description can be given of the issues involved: it looks at the moment as though one of these factors turns on a linguistic distinction: a prejudice at one end of the scale in favour of sophisticated (if sometimes inappropriate) and conventional (if sometimes hackneyed) forms of the written language, and at the other end in favour of the more familiar and honest-sounding (if sometimes slangy) tone of the spoken language of the writers' homes. The other factor seeems to be related to the subject matter rather than the language and might tentatively be described as a predilection on the one hand for observations from real life and on the other hand for flights of fancy into the unreal, the impossible.

The selected team of experimental markers referred to on page 18 above represents a deliberate attempt to reflect the extreme views in both these factors. It was based on the factor loadings and not, of course, upon any interpretation of the factors. A preliminary marking of some 18 specially selected compositions would give sufficient grounds for selecting teams on this basis and, if the factors were found to have general application, a standard set of compositions could be produced for this purpose.

(*c*) The 27 essays about which examiners most disagreed were found to feature some essay subjects more than others. The most

popular subjects as far as the whole sample was concerned were No. 5 (My Street) with 48 answers and No. 6 (The Circus Comes to Town) with 45 answers. Of these one answer to No. 6 and ten answers to No. 5 were included in the 27 about which examiners disagreed. Out of 27 in the whole sample who tackled No. 10 (Short story about a great temptation etc.) seven wrote compositions that had to be included in the "selected 27".

It might be concluded that essays of the kind represented by Nos. 5 and 10 ought to be avoided by setters in the interests of reliable marking. Our conclusion would rather be that, in order to retain subjects of this kind, a more refined system of marking such as the one sought here needs to be found and used (4) (5).

NOTES AND REFERENCES

1. Stephen Wiseman, "The Marking of English Composition in Grammar School Selection" (*British Journal of Educational Psychology*, XIX, 3 November, 1949).
2. We owe this opportunity to the interest and co-operation of Mr Donald Taylor (the principal English examiner for this certificate), Mr Kenneth Spreadbury (Divisional Education Officer, South West Herts) and the Heads of twelve secondary schools in the area.
3. Average teaching experience of these examiners, 13 years. Five of them share 25 years experience examining O.L.G.C.E. Language and 16 years examining O.L. Literature. Four of them share 25 years experience examining at 11+ selection tests.
4. The cost to us of three rapid impression marks and the mark for mechanical accuracy was 3/2d. per script.
5. Acknowledgment is made to my colleagues Miss N. C. Martin and Dr D. M. Lee for their assistance and to the London Institute of Education for paying the bill.

APPENDIX A

South West Herts. Certificate of Education 1960

ENGLISH LANGUAGE I

B. Now write one of these compositions.

5. My street.
6. The circus comes to town.
7. Behind the scenes in a shop.
8. Every day sixteen people are killed on the roads. Discuss what might be done to prevent this tragic loss of life and how to make people ever aware of the danger.

9. Describe the many arrangements you would have to make if you were producing the school play.
10. Write a short story in which a boy or a girl faces a great temptation and is able to overcome it.

APPENDIX B

MARKING INSTRUCTIONS

You are asked to give your mark on your *impression of the whole performance*. Sub-totals for spelling, vocabulary, etc., are not to be used. You are asked to make up your mind quickly keeping to a rate of 30 (or more) per hour.

Errors in spelling, punctuation and grammar, and "slips of the pen" will be separately marked by somebody else and should not be taken into account in your assessment.

Look for excellencies rather than penalise deficiencies. Look for a general language sense, expressed by an appropriate and vivid vocabulary and idiom, by coherence (unity and shapeliness of the whole piece within the writer's terms). Reward the writer who is involved enough to write in a direct and expressive way, and detached enough to show a point of view by direct comment or by implication.

In short: how interesting do you find the piece of writing? And for this criterion to operate it is necessary to guard against the boredom of reading that is bound to set in when you read a series of scripts on the same subject. For this reason some people may find it better to work in short spells.

Read between 30 and 40 scripts before you begin to mark in order to establish a standard in your mind. After that try to make individual judgment of each piece of work against this scale.

Mark on a numerical scale; the average candidate should gain a mark of 10; use the full range of the scale; neither 0 nor 20 should be impossible marks.

Part of this inquiry concerns the speed at which the work can be done. Please enter in the left-hand margin of the mark sheet times of beginning and ending each spell of work and (at the appropriate points) enter in minutes the approximate duration of any interruption.

N.B. (1) Mark *only* Section B on the enclosed paper, and *not* Section A.
(2) Please do not make any remarks on the scripts.
(3) Please return the completed mark sheet with the scripts and do not keep any other record of the marks given.

PERSONALITY FACTORS AND EFFECTIVE PROGRESS IN TEACHING

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1. INTRODUCTION

"THE most intelligent students make the best teachers."

"The best teachers are those who themselves did well at school."

"The best teachers are those who have sympathy for and an understanding of children."

"The best teachers are those who are aware of their own ability and who face the class with confidence."

Opinions like these are common, but they are often expressed without any basis beyond personal opinion. At the same time, the factors making for teaching success often elude those who approach the problem from an experimental standpoint. A study of bibliographies and summaries (1961) of relevant research such as those of Evans (1959), Barr and Jones (1958) and Barr (1961) shows that many findings are contradictory. Evans (1959), however, in reviewing the literature on specific qualities like physical characteristics, intelligence, scholarship, professional information, attitudes and interests and personality does give an interesting synthesis of various findings. Gross defects of physique, health or speech, for example, are undesirable. Intelligence is required up to a basic minimum level necessary for success in teaching, but, given that minimum there is little relation between teaching ability and actual level of intelligence. Well informed, scholarly people seem to be more successful than others in teaching, but attitude and personality tests have yielded little. Emotional stability seems to be a useful attribute.

Research on a very large scale such as that of Ryans (1960) has pinpointed through a factor analysis approach such qualities as stimulating, imaginative, surgent as opposed to dull and routine; warm, understanding, friendly rather than aloof, egocentric and restricted; responsible, businesslike and systematic as against evading, unplanned and slipshod. Even then, however, it is emphasised that

such qualities are transitory and depend on the age, health, attitude and mood of the teacher at the time. Barr (1961) summing up researches in Wisconsin, observes that grouping together various qualities might be more successful than isolating them.

Much work also has been carried out in trying to find the right kind of criterion. How can we be sure that estimates of teaching ability in the classroom are sound? Optimistic results such as those of Tudhope (1943), who found a high correlation between training college final assessments and H.M.I.'s ratings three years later, have not always been confirmed. Robertson (1957), for example, points out that those making assessments rarely agree on the qualities for which they are looking. It might be argued, however, that a composite assessment based on different viewpoints could be the most accurate.

2. The Present Investigation

Subjects

The students concerned were women taking the three year Diploma course. A larger number of assessments of practice teaching were available for each of them than for other groups of students taking shorter courses. There was also the advantage of being able to repeat tests given in the first year during the third year to see if there were any changes in average scores. In all, 499 different students were tested, 267 in the first year and 232 in the third. As one group of students was tested in both first and third years, the total number of each test given was 645.

The Tests

The tests and assessments used had either been applied in other similar investigations or had an apparent theoretical relevance, e.g. passes in the Scottish Leaving Certificate. The latter was, in fact, taken into account, 2 points for an "academic" higher pass and 1 point for a "lower" pass or practical higher. Another such test was the Moray House Adult Verbal Reasoning Test (M.H.A.).

The other tests were:

1. The Bernreuter Personality Inventory (1935). This provides scores which are supposed to indicate a person's confidence or sociability. Questions like "Do you get stage fright?" are answered by Yes or No or Don't Know. Although this test is not frequently used now in the United States where it was once extremely popular,

evidence had accumulated that some aspects of this test were associated with teaching ability. In it a score like −135 would indicate high confidence or sociability while +162 would suggest the opposite.

2. The Minnesota Teacher Attitude Inventory, M.T.A.I. (1951)

This consists of 150 statements to which the subject is invited to respond S.A. (strongly agree) or A. (agree) or U. (undecided) or D. (disagree) or S.D. (strongly disagree). A typical statement is "Children have a natural tendency to be unruly." Each response is awarded a weighted score. A high plus score is supposed to show a favourable attitude to children and the work of a teacher.

3. The Rosenzweig Picture-Frustration Study (1948)

As it is often said that tests such as the two mentioned above do not give accurate scores because the answers may be "faked" so as to produce a "better" score, this test, a projection test, was included. Here, there are 24 line drawings in which an individual is either frustrating another or being frustrated himself. The subject writes down a response to what one of the characters is saying. Three scores can be worked out from these responses, E, I and M. Each represents the percentage of responses which can be classed as extrapunitive (E), where aggression is turned outwards—"You are the one to blame"—(I) intropunitive, where it is turned inwards to the self—"It was my fault"—and (M) impunitive, where the situation is glossed over—"It doesn't matter". Guba and Getzels (1955) found a striking correspondence between effective teaching and high scores on I. and M. and between poor teaching and high E's.

4. The Social Intelligence Test* (1930)

Separate scores were worked out here for sense of humour, judgment in social situations and observation of human behaviour. In the first, a joke is completed by choosing one of several alternative endings, in the second a course of action is selected from alternatives in a particular social problem, and in the third, 24 statements such as "Most people tend to imitate those whom they admire" are assessed as true or false. All of these seemed to have some element of practical or applied intelligence of the kind that would be valuable in teaching.

5. College assessments in education and psychology. These comprise one final assessment—A or B or C or D or E—for the whole course.

* Loaned by Professor P. E. Vernon.

3. The Criterion

The criterion used was the final teaching assessment. (With first year students, only one year's assessments could be used.) This is a composite assessment based on 15-20 separate assessments by 7 or 8 different staff members over the course of three years, most weight being given to the most recent assessments. This assessment is on a 5 point scale, A, B, C, D or E representing 5, 10, 70, 10, 5% of the total number of students in the year.

4. Statistical Handling of Results

Although the means and standard deviations were calculated for all students in each test, the comparison between those securing "good" rather than "poor" teaching assessments was obtained by grouping those in the A and B categories and contrasting them with those in the D and E categories. This was done either by estimating the degree of significance between the mean scores of these groups (Fishers' *t*) or by the chi squared method. A significance of ·01 or ·05 means that the chance of the difference being fortuitous is 1 in 100 or 5 in 100, i.e. 99% or 95% certain.

5. Results

(*a*) *First Year Students*

The table below shows those tests where differences between mean scores of students assessed AB and DE in teaching were significant. Tests not mentioned failed to discriminate.

	Mean Scores					
Test	AB N=43	S.D.	DE N=40	S.D.	*Difference*	*Level of Significance*
M.T.A.I.	22·2	26·8	6·7	28·2	15·5	·01
Observation of Human Behaviour	21·8	2·7	20·0	2·2	1·8	·01
Bernreuter Confidence	0	82	+34	66	34	·05

(*b*) *Third Year Students*

Two tests which produced significant differences between AB and DE students in teaching were the Minnesota Teacher Attitude Inventory and the Sense of Humour test. Assessments in education and psychology were also significantly related.

Mean Scores

Test	AB N=87	S.D.	DE N=56	S.D.	*Difference*	*Level of Significance*
M.T.A.I.	33·8	27·8	25·4	23·6	8·4	·05
Sense of Humour	15·8	2·9	14·7	2·6	1·1	·05

The chi squared table showing the association between teaching assessments and education and psychology assessments is shown below. Numbers in O's show totals observed, those in □ show those expected.

		Teaching Assessments AB	C	DE	
Education and Psychology Assessments	AB	(11)	(47)	(3)	61
		□ 10	□ 42	□ 9	
	C	(43)	(183)	(39)	265
		□ 41	□ 183	□ 41	
	DE	(5)	(38)	(17)	60
		□ 9	□ 42	□ 9	
		59	268	59	386

It is noticeable here that the closest area of agreement is that concerning DE students. Agreement on AB is only slightly better than might be expected by chance. The association shown by the table is, however, significant at the ·05 level. These findings led to the question, "Is there a connexion between assessments in education and psychology and M.T.A.I. scores?" The mean M.T.A.I. score of those assessed AB in education was 33·5 (S.D.=26·0) and of those assessed DE 21·9 (S.D.=28·5). The difference, 11·6, was significant at the ·05 level.

(*c*) *Differences in Mean Scores Between First and Third Year Students*

The finding that the Bernreuter Confidence Scale discriminates in the first year but does not do so by the third year suggests that personality characteristics may change during the three years of the College course, i.e. from the ages of 17 or 18 to 20 or 21. One of the most interesting features of the investigation was, in fact, the signi-

ficant changes in mean scores which occurred in most of the tests between the first and third years. The following table gives details.

Test	*Mean Scores* 1st Yr.	S.D.	3rd Yr.	S.D.	*Difference*	*Level of Significance*
Moray House	64·9	12·2	70·6	10·7	5·7	·01
Picture Frustration						
(1) E	52·5	16·4	49·3	15	3·2	·01
(2) M	23·5	10·3	26·3	9·9	2·8	·01
Bernreuter Confidence	36·7	80·8	4·3	73·5	32·4	·01
Social Intelligence						
(1) Social Situations	21·4	2·6	23·0	2·4	1·6	·01
(2) Human Behaviour	20·9	3·0	22·0	2·6	1·1	·01
(3) Sense of Humour	14·2	3·0	15·3	2·6	1·1	·01
M.T.A.I.	10·7	29·8	28·4	26·0	17·7	·01

(*d*) *Average Scores for All Students*

The average scores on all the tests for first year and third year students are given below. The norms show how students in the College compare with other similar groups. Norms marked * are derived from American sources.

	School Attainment	*Moray House Adult*	*Picture Frustration* E	I	M
First Year	7·27	64·9	52·5	25·1	23·5
Third Year	——	70·6	49·3	25·3	26·3
Norm	——	67	45*	28*	28*

	Bernreuter		*Social Intelligence*			
	Confidence	*Sociability*	*Social Situations*	*Human Behaviour*	*Sense of Humour*	*M.T.A.I.*
First Year	36·7	−20·1	21·4	20·9	14·2	10·7
Third Year	4·3	−19·6	23	23	15·3	28·5
Norm	+5*	−34*	None available			1st Yr. 10* 3rd Yr. 80*

6. Discussion

The test which discriminated most consistently between AB and DE students in teaching was the M.T.A.I., which discriminated similarly with assessments in education and psychology. This differs from Evans (1958) who found that the M.T.A.I., with graduate students, correlated with marks in theory of education at the ·05 level, but not with practical teaching work. Confidence, on the Bernreuter scale, is significantly related to teaching assessments only with first year students, and it may be that experience and training iron out individual differences in this respect. Some kind of insight into human behaviour also appears to be relevant to teaching ability in the first year student. On the other hand, the sense of humour test discriminates better in the third year. Scores not showing a significant association at the end of either the first or the third years include school attainment, Moray House scores, the Bernreuter sociability scale and the Picture Frustration Study. The first two may fail to predict teaching assessments at this stage because they have formed the initial basis of selection, i.e. Moray House type tests at the transfer test for secondary schools and S.L.C. results at the stage of entry to the College.

The large number of significant differences found between mean scores in first and third years may reflect personality changes. Increase in intelligence test scores for students at this stage may occur as the result of

women. They tend to be less confident or sociable than their American counterparts, but with the first, the difference levels out by the third year. The extent to which the average score on the M.T.A.I. by third year students differs from American norms shows to what extent a positive or negative attitude is determined by the general standards of one's own group. Clearly, attitudes are of great importance in the work of the teacher and these must themselves be affected by motivation.

To be of general use in this country, the M.T.A.I. would have to be re-standardised and the wording of a number of the statements changed. If this were undertaken, the test might well become a useful predictor of teaching ability.

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AUGMENTED ROMAN ALPHABET EXPERIMENT

AN OUTSIDER'S REPORT

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DURING the course of the current experiments (1) into the use of the Augmented Roman Alphabet (A.R.) as a method of teaching the early stages of reading, many reports will doubtless be issued by those who are responsible for arranging the experiment, as well as by teachers who are taking part in it. It is equally certain that a great number of teachers and educators will be awaiting with interest the results of these experiments. Yet, in the minds of those who are not actually engaged in experimenting with a new teaching method, there is frequently a measure of scepticism regarding claims of remarkable results which may be made by obviously enthusiastic participants in the experiment. In these circumstances, an account from an independent observer may prove of some value.

This account concerns one experimental class and it is probably relevant to relate how the writer came to be in the privileged position of an independent observer of the work in this class. When it was announced that a certain Local Education Authority in the north of England was to take part in this experiment, I told the Director of Education of my interest in problems relating to the early stages of learning to read and asked his permission to observe the experiment. My request was granted and I was given complete freedom to go into any experimental school at any time, as well as to attend the meetings of teachers concerned in the experiment, if I so wished. The class referred to in this report is one which I have visited regularly and informally from the inception of the experiment. The testing mentioned in this report was not carried out at the instigation of anyone concerned in the experiment, but arose as a result of my observations of the progress being made by the children. The testing was carried out by the writer, with no other adult in the room.

This particular Infant School is situated in the centre of a large

council housing estate, from which all its children are drawn. The headmistress of the school described herself at first as "a grudging participant" in the experiment, in that she was not anxious to commit children to being taught by a method which was not yet proven. As it happens, the children in this area start school at the beginning of the school year in which they will reach their fifth birthday. In September 1961 the 68 new entrants to the school were divided between two classes, according to age: 38 children aged 5 years 0 months to 4 years 5 months formed one class, while the other class consisted of 30 children aged 4 years 5 months to 4 years 0 months. It was the latter, younger class which was committed to the A.R. experiment. The headmistress had finally agreed to allow these younger children to participate in the experiment because, as she said, four-year-olds are not usually given formal training in reading and thus if the experiment proved abortive there would still be time for the children to begin to learn to read by more orthodox methods at the age of five.

During the autumn term 1961, visits to the class and talks with the teacher and the children suggested that this was a group of four-year-olds of average intelligence who were following the normal school routine one would expect for children of their age. It was clear that there was no pressure whatsoever towards learning to read and write. Pictures and objects in the room were labelled in A.R., instead of orthodox print. The book corner was more meagre than in most infant classrooms because of the paucity of books printed in A.R. at that time. Apart from these two differences one could have been in any ordinary reception class. At the beginning of the term, wall charts and a few of the books in the "Janet and John" reading scheme, printed in A.R., had arrived in the school but the supplementary books for the scheme were not then available. Neither the headteacher nor the class teacher were perturbed about the lack of reading books because, as they indicated, they were not expecting to do any formal teaching of reading during this first term nor probably, for some children, during the whole of their first year.

During the spring term 1962, it became apparent that many of the quicker children in the class were making very rapid strides with reading. They were progressing steadily through the reading scheme. In addition, they were not only handling but actually reading many books from the book corner. Most of the slower children in the class who were not judged ready to begin the reading scheme, were showing a much greater interest in books than usual. The reactions

of the entire class to the reading situation were what one might have expected from children a year or more older than themselves.

Towards the end of the summer term 1962, the reading situation in the class was as follows. Ten children had read as far as "Janet and John" Book 4, including the appropriate supplementary books. They had also read a large number of library books printed in A.R. It was estimated that a few of the better readers had read something like two hundred books. Admittedly, some of the two hundred were very simple books with only a sentence or two per page, but others contained a great deal of print; two examples are *Little Black Sambo* and *Henry the Green Engine.*

Twelve children, who might be termed "the middle group", were halfway through "Janet and John" Book 3, having completed the preceding basic readers and supplementary books in the scheme. They had also read varying numbers of books from the book corner.

Of the remaining eight children, six had read "Janet and John" Book 1 and the relevant supplementary books and were engaged on reading the basic Book 2. These six children knew the sounds of the 43 characters in A.R. and could blend them into words, although they were not very fluent. Only two children in the class had made less progress; they could recognise a few words by sight and knew the sounds of some of the characters.

A note on the children's writing would seem apposite at this point. During the first term the children had not been encouraged to do any writing, as the headmistress was doubtful of the value of training children to write an alphabet which they would later need to forget. During the second term, some children began to write sentences and "stories" spontaneously. By the third term, a great deal of free writing was being done. Because of the absolute regularity of A.R. spelling the children experienced no difficulty in making a good approximation to the correct (A.R.) spelling of any word which they wanted to write. They thus acquired no adverse attitudes towards the normal difficulties of spelling and the result was a greater volume, and a higher standard, of free writing than the school had ever experienced with a class of this age.

Two interesting developments which occured during the children's third term in school are worth mentioning. First, many children became so absorbed in reading books that they had literally to be driven into the playground at playtimes and after lunch, even on fine sunny days. In fact, the headmistress became rather worried about such young children wanting to spend so much time with

books. Secondly, it was discovered that one or two children had, by accident, found themselves able to read orthodox script. Books in traditional print had been deliberately kept from them at school and at home. There was no intention on the part of the school to encourage these children to make the transfer from A.R. to orthodox print until a much later stage. Indeed, all sorts of plans had been made as to how children could be taught to make the transfer. Yet here were one or two children, barely five years old, who, by chance, had obtained library books in traditional print from older brothers and sisters or from the town library, and who could read them with no apparent difficulty. Two of the books in question were *Black Beauty* and *Treasure Island.*

One of the key questions regarding the efficacy of this method of learning to read lies in the problem of the transfer from A.R. to orthodox print. Until the children have made this transfer and can be tested in the recognised medium of traditional print, results of success with the method are bound to be considered with caution, even by those who do not entirely discount them. For instance, the use of "transliterated" copies of well-known standardised Graded Word Reading Tests, with children who can read A.R., would appear to be of little or no value. Once a child can recognise and sound the 43 characters of A.R. and has learned to blend these sounds together to make words, it is theoretically possible for him to read any word in A.R., regardless of how difficult the word may be considered in normal print. A child of any age, who had acquired these techniques in Augmented Roman, might well be able to pronounce the words in the bottom line of print on one of the well-known Graded Word Reading Tests, if it had been "transliterated" into A.R. To convert such a performance into a reading age of fifteen years or more would obviously be meaningless.

Thus the only results which could begin to offer any valid comparison between the A.R. method of learning to read and the more usual methods would be those obtained from standardised tests in traditional print. Such tests will no doubt be used in the experiment when children have officially made the transfer, in school, from books using A.R., to books using traditional script and after the children have attained familiarity and fluency in the new medium. It was not expected that this stage would be reached by average children until they were seven or seven and a half years old. However, knowing that a number of these young children had made the transfer to orthodox print on their own and with apparent ease, it seemed

worthwhile to let them attempt a simple standardised reading test in traditional print.

The test selected was Southgate Group Reading Test One—Word Selection Test, in which the test papers were likely to appeal to young children because they embodied many pictures. The test had been standardised on six-year-old children and although it had been established that an occasional very bright child of five could manage it, the test was not recommended for general use with five year olds. Indeed, before encountering the children in the present class, I should have been horrified at the thought of this test being used with children barely five years old.

It is worth pausing for a moment to consider the difficulties under which these children were labouring, in this test situation. They were taken in small groups into a classroom other than their own. They were seated at individual tables, well spaced out from each other and all facing the front of the room; a very different situation from their usual habit of sitting clustered round tables in small companionable groups. Furthermore they were debarred from looking at their neighbours' papers, to see what had been done and to give, or obtain, help from each other as they normally did. They were also discouraged from talking about what they were doing. In fact, it was an entirely different social situation from that found in the normal classroom. The children were then asked to carry out definite instructions in a specified manner, for example, "Point to the first word in the first box". The words on the test papers were somewhat smaller than most of the print they had encountered in their reading books. Finally, the words were printed in traditional script, although no comment was made on this fact by the tester.

Despite all these drawbacks and despite the fact that only two or three of the children had previously attempted to read traditional script, all the children appeared to enjoy trying to play these so-called games. The better readers in the class were allowed to attempt items until the tester felt they had reached their limit. No child was allowed to go on straining to do something which was beyond him, yet each child was led to believe that he had made a successful attempt. Even the slowest reader in the class felt he had done well by completing the practice examples, with the help of the tester.

The test was administered in July 1962, towards the end of the children's third term in school. The results are set out in Table I. Three children were absent when the testing took place and thus only 27 children are shown in the table.

TABLE I

Mean Chronological Age = 5 *yrs.* 1 *m.*
Mean Raw Score = 8
Mean Reading Age = 6 *yrs.* 3 *m.*

Child		*Chronological Age* Y. M.	*Test* 1 *Raw Score*	*Rdg. Age* Y. M.
1	B	5 2	24	7 5
2	B	5 0	23	7 3
3	G	4 11	18	6 10
4	B	5 2	16	6 9
5	G	5 0	15	6 8
6	G	5 2	13	6 7
7	G	4 11	13	6 7
8	B	5 2	12	6 7
9	B	5 1	11	6 6
10	G	4 11	10	6 5
11	G	5 2	9	6 4
12	G	5 0	9	6 4
13	B	5 1	7	6 2
14	G	5 3	6	6 0
15	B	5 1	5	5 9
16	G	5 2	5	5 9
17	G	5 2	5	5 9
18	G	5 0	4	
19	G	4 10	4	less
20	B	4 11	4	than
21	G	5 2	2	5 yrs. 9 m.
22	B	5 2	1	
5 children			NIL	

The scores which were obtained were astonishing. It had been anticipated that a few of the better readers in the class might complete a small number of items correctly. Even this would have been considered an achievement in the circumstances. But the results were such that, had every child in the class been exactly one year older and had the children been taught to read in traditional print, one would have concluded that they constituted a class of above average intelligence who had made exceptionally good progress in learning to read. When one bears in mind that the average age of these children was between 5 years 0 months and 5 years 1 month (the youngest being 4 years 10 months and the oldest 5 years 3 months), that they had learned to read by means of a different script, that they had not had any training towards transferring to orthodox print and that

only two or three children had ever attempted to read traditional print, the results are almost unbelievable.

It will be noted that only 5 children out of 27 were unable to score on the test. A further 5 children achieved scores ranging from 4 to 1, which were below the norms for the test. Even these smaller scores were not haphazard guesses, but were the results of meaningful choices which were made by the children concerned—a fact which was apparent to the tester, as the numbers in each test group were small. The remaining 17 children achieved scores which could be converted into Reading Age from 7 years 5 months to 5 years 9 months. In the reference numbers which are used instead of children's names, B indicates a boy and G a girl. It will be seen that, of the top ten children, five are boys and five are girls; the same is true of the lowest ten children.

As the results from the first year's work had been so impressive, the headmistress had agreed to continue the experiment. The class in question moved to a new teacher. Children who had not completed "Janet and John" reading scheme, continued with it in the normal way. At the beginning of the autumn term 1962, the class medium of instruction in reading and writing was A.R. During the term, however, a number of children were considered to be ready to make an official transfer to traditional print. The transfer involved not only providing the children with books printed in orthodox script, but it also necessitated the use of a new form of spelling for any writing on the blackboard. Thus the teacher frequently found herself doing two different kinds of writing on the board. The children who had "transferred" were allocated a special blackboard and their words were always written in a different coloured chalk. At this time, as was to be expected, the free writing of children who were making the transfer showed examples of spelling in both alphabets. How long the children will take to make the transfer in spelling is a question which cannot yet be answered. By the end of December 1962, six children were reading nothing but traditional print in school.

At the end of the autumn term 1962, the children were again tested, using a parallel form of Southgate Group Reading Test One —Word Selection Test. On this occasion all 30 of the children in the class were present. The results are summarised in Table II.

It will be seen that a steady improvement had been made during the term. Although only six children had been reading traditional print in school, 27 children were able to score on the test. (The

TABLE II

Mean Chronological Age = 5 *yrs.* 6 *m.*
Mean Raw Score = 14
Mean Reading Age = 6 *yrs.* 8 *m.*

Reading Ages		*No. of Children*
Y.	*M.*	
7	9 and over	3
7	7	2
7	3	1
7	0	2
6	11	1
6	9	5
6	8	2
6	7	1
6	6	1
6	5	2
6	4	2
6	3	2
6	2	2
6	0	1
No score		3

children who had made the transfer were the first 5 children in Table II, together with one child who scored a Reading Age of 6 years 9 months.) The mean chronological age of the class was just less than 5 years 6 months; apart from three children who could not manage the test, the remaining 27 children in the class attained Reading Ages of 6 years 0 months and over. The scores of the highest two children went beyond the table of norms for the test, representing Reading Ages greater than 7 years 9 months. At the lower end of the list, it was interesting to note that the 5 children whose scores in July had been 4, 4, 4, 2 and 1, now registered scores of 17, 9, 8, 7 and 10 respectively, representing Reading Ages of 6 years 9 months to 6 years 2 months.

As Test One had not proved sufficiently difficult to extend two of the children, and as nearly a third of the class showed Reading Ages of 7 and over, it was decided that the 9 children who headed the list might attempt Southgate Group Reading Test Two—Sentence Completion Test. The test, which was designed to follow Test One, with a slight overlap, was intended to be used mainly with 7 and 8 year olds. It was found that only one of the selected nine children was unable to score on the test. The others gained scores equivalent to

Reading Ages of 8 years 3 months to 7 years 2 months; three of these children were still reading books in A.R., not having yet made the transfer to traditional script. The results are set out in Table III.

TABLE III

Child	Chronological Age	TEST 1 Reading Ages	TEST 2 Reading Ages
	Y. M.	Y. M.	Y. M.
1 B	5 7	>7 9	8 3
3 G	5 4	>7 9	7 10
6 G	5 7	7 9	7 9
4 B	5 7	7 7	7 9
2 B	5 5	7 7	8 4
12 G	5 5	7 3	7 2
13 B	5 6	7 0	—
9 B	5 6	7 0	7 2
5 G	5 5	6 11	7 3

> indicates "greater than"

It is certain that no definite conclusions about the value of A.R. as a method of teaching reading can be drawn until the children in the experimental classes are considerably older, perhaps even until they have reached the upper end of the primary school. Furthermore, at that stage, one would wish to consider the published results and the experimental design of the current widespread experiments in the use of this alphabet before one could attempt a final appraisal. Nevertheless, my continued observation of one class in the experiment, considered alongside the results of tests in traditional print, would lead me to suggest that, even at this early stage, the following points would appear to emerge. (It must be stressed that these are merely tentative conclusions referring to one particular class.)

1. Children in this reception class learned to read at an earlier age than usual.
2. The process of learning to read took place in a much shorter space of time than is usual.
3. As a result of 1 and 2, children aged from 4-5½ years were much more interested in reading and read very many more books than is usual with children of this age.
4. The successful use of A.R. suggests that most young children are able to make finer visual and auditory discriminations than has commonly been supposed.
5. Listening to the children reading, talking to them about what they had read and considering the test results in Table III, all

suggest that the children's understanding tends to keep pace with their ability to pronounce the words which they are reading.

6. Free writing in the class appeared more spontaneous, prolific and correctly spelt than is usual with such young children.
7. All the indications are that the anticipated problem of making the transfer from A.R. to traditional print is one which exists in the mind of the adult rather than one which causes a practical stumbling block to the child.

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SOME POSSIBLE DETERMINANTS OF THE READING AND BOOK-USE OF A GROUP OF TRAINING COLLEGE STUDENTS

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WHY do some training college students enjoy their reading, use books extensively and possess a wide selection of them, while some students read little, use books hardly at all and possess few of them? An answer to this question may shift the emphasis away from deploring the behaviour of this second group, towards a more useful appraisal of the part books play in the lives of students. From such a standpoint a more fruitful way of educating them in reading and the use of books may be developed.

THE RESEARCH

A 40% random sample of men students in their final year was the subjects of this study. For each student it was possible to obtain three ratings:

(*a*) A self-rating of the frequency of each student's reading for pleasure.

(*b*) An objective rating of the student's borrowing from the college library, from departmental libraries and from other sources.

(*c*) A rating of the number of books each student owned at college and at home together with a bibliography in support, and a classification of each book according to whether it was for his college course, a general reference book or for personal use.

Each of these ratings was scored on a four point scale and then summed to give a "Reading Index". The students were then placed in one of three categories according to their index scores: *A* (above

average), *B* (average), *C* (below average). Of the 64 students, 20 students were placed in each of categories *A* and *C*, and the remaining 24 in category *B*.

All the 64 students selected, without exception, completed a long and detailed questionnaire designed to elicit information about their home background, their early experiences of books and reading, their experience of books at secondary school, and their behaviour towards books since coming to college. Each section of the questionnaire will be dealt with separately below.

Throughout the analysis of the responses to the questionnaire in relation to the three categories, *A B* and *C*, chi square was used with a correction for continuity. The 5% level of significance was adopted as the lowest limit acceptable.

Home Background

A number of hypotheses were set up which appeared likely to associate reading and book-use with home background. They were that an above-average reading index would be associated with:

(*a*) a high level of reading by both or either of the parents;
(*b*) the number of books in the home;
(*c*) the educational level of both and of either of the parents;
(*d*) the practice by either or both parents of reading to their children from an early age;
(*e*) the membership of a public library by the parents and by the student at an early age;
(*f*) the social class level of the home;
(*g*) the student's awareness at an early age of the importance to him of books and reading.

Only two of the hypotheses proved to be valid and to associate the level of reading and book-use with aspects of home background. The remaining five were not. Thus the educational level of either and of both parents together was not associated with the students' reading and book-use. Nor were the number of books in the home, parents' reading, being read to by parents (65·6% of all the students reported that they were read to), parents' membership of a public library and early—before age 11—library membership of the student.

Tables I and II show that only *f* (social class) and *g* (early awareness of a person or event engendering a love of books) were associated with reading and book-use.

TABLE I

SOCIAL CLASS

Social Class	*Reading Index* A	B	C	*Total*	*Percentages* A	B	C
Middle Class	8	14	16	38	40	58·3	80
Working Class	12	10	4	26	60	14·7	20
Total	20	24	20	64	100	100	100

$$X^2 = 5{\cdot}9, \quad P = 0{\cdot}05$$

Students who report themselves to be lower-middle and middle-class are proportionately more likely to have an average or a below average "reading index" while students who report themselves to be working-class are likely to have an above average "reading index".

TABLE II

RECOLLECTION OF AN EVENT OR PERSON AND AWARENESS OF LIKING FOR BOOKS AND READING

Recollection	*Reading Index* A	B	C	*Total*	*Percentages* A	B	C
Can Recollect	14	6	4	24	70	25	20
Cannot Recollect	6	18	16	20	30	75	80
Total	20	24	20	64	100	100	100

$$X^2 = 13{\cdot}2, \quad P > 0{\cdot}01$$

The events reported on by the students to have generated in them at an early age a love of books and reading were varied. Many of the events were associated with a parent, a brother or sister, with an interest in a subject—polar exploration, history, collecting flowers, geology and so on.

Clearly, the ability to recall a happening of this kind marks off the student with an above average "reading index" from the rest.

SECONDARY SCHOOL EXPERIENCE

All the 64 students in the sample attended a secondary school which possessed a library.

In this connexion, as previously, a number of hypotheses were set up which appeared to be associated with reading and the use of books. Briefly, they were concerned with the use made of the secondary school library, the time in school given to reading and library use, to the guidance and help given by teachers in the choice and selection of books, to the freedom to browse in the library, and to the extent to which books were freely available to the children.

None of the seven hypotheses set up proved to be associated at an acceptable level of significance with the students' reading and use of books.

College Experience

This area was explored not so much to discover if college experience was associated with reading and book-use as to discover if the students' reading was all of a piece. It was in a sense a validation study.

The hypotheses set up were aimed to associate the "reading index" with the students' reported behaviour in college towards books and reading. Students were asked to report whether they had read more, about the same or fewer books since coming to college; to report on the time they had for reading in college; whether this was more, the same or less than before; to report whether they had read more or less widely; to report whether they read mostly for pleasure or to prepare for examinations and to write essays, and to report on any increase or decrease in their use of the public library during their vacations.

As was expected, there was no association between the time available for reading in college and the "reading index". Nor was there an association between the amount of reading done and the "reading index" or the students' use of public libraries during the vacation.

Students with a below average index did not feel they had less time for reading, their amount of reading had not decreased, nor did they use the public library more than was their custom during the vacations. The same was true of students with an above average "reading index".

There were, however, associations between reading widely and the purpose for which the reading was undertaken as Tables III and IV show.

TABLE III

Reading Widely

	Reading Index				*Percentages*		
Reading Widely	*A*	*B*	*C*	*Total*	*A*	*B*	*C*
More	18	10	10	38	90	41·7	50
Same or Less	2	14	10	26	10	58·3	50
Total	20	24	20	64	100	100	100

$X^2 = 8{\cdot}1 \quad P > 0{\cdot}02$

Since coming to college students with an above average "reading index" report that they read significantly more widely than before coming to college than students with an average or below average index.

TABLE IV

PURPOSE OF READING AT COLLEGE

	Reading Index				*Percentages*		
Purpose	*A*	*B*	*C*	*Total*	*A*	*B*	*C*
For Pleasure	14	8	8	30	70	33·3	40
For Exams and Essays	6	16	12	34	30	66·6	60
Total	20	24	20	64	100	100	100

$X^2 = 5{\cdot}9 \quad P = 0{\cdot}05$

A higher proportion of the above average students than the average or below average students read while at college mainly, though of course not exclusively, for personal satisfaction or, as it was put to them in the questionnaire, "because I enjoy reading".

DISCUSSION

It would appear that the behaviour of students towards books and reading is all of a piece, is part of the individual's life style. On the whole the above-average students on the stated criteria read more widely while at college than before coming, though they do not read more books nor devote more time to reading. It is as if college provides them with an opportunity to extend their reading experience and they take it. These students continue to read mainly because they enjoy reading and this need is not diverted by the requirements of essays and examinations. They are individuals who can recall an experience which engendered in them a love of books and reading.

Their experience at secondary school, and their experience of being read to, of seeing their parents read, of books in the home and of being influenced by their parents' educational background do not appear to have affected them differently from those students who are average or below-average on the criteria.

However, the above-average students tend to come from a working class rather than a middle class social level. It could be argued that such students are socially mobile and see books and reading as a means to social advancement. In the face of their early awareness of books this is unlikely to be a sound argument. It is more probable

that an interplay of personality and social class is at work in these students. To be what they were in the social setting of their lives books and reading served a purpose and to be what they are books and reading continue to matter. If something like this is valid, and this slight piece of research by no means establishes this to be so although it is supportive, then students of average and below average reading habits may be different kinds of people from the students who are above average.

Attempts to encourage the average and below average student to read more widely and to use books more extensively must be based on an understanding of them as people and not based on an attempt to turn them into the kind of people who by their very nature enjoy reading and use books extensively.

EDUCATION AND SOCIETY

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PART II

(*c*)

I wish now to consider the conception of man implicit in the work of some of those who stress the social aspect of education; such a conception is bound to affect their view of the nature of the pupil and of the function of education. All theories of education involve some such view; as Professor Stuart Hampshire puts it:

> If most classifications of things, other than the disinterested classifications of science, have their grounds mainly in human powers and interests, the distinguishing of these powers and interests, and the understanding of their relation to each other, have an absolute priority in understanding the whole range of our thought and the structure of our vocabulary. For this reason it is possible to characterise philosophy itself as a search for a "definition of man", and to interpret the great philosophers of the past as each providing a different account of the powers essential to men. (*Thought and Action*, p. 232.)

Social theorists of education usually conceive of man as wholly a part of the physical and social world (an "animal"): nothing of him belongs to any transcendental sphere; and what he "becomes" is "determined" by the interaction between his individual nature and social forces. It is true that a main distinction between different social theorists lies in whether the end product is to be fitted into existing society or whether he is to become a denizen of a "new" society. But they agree with Durkheim in repudiating the notion that there is "*one* human nature, the forms and properties of which are determinable once and for all" (10), a belief which Durkheim considered had subsumed the work of educational theorists before sociology taught us differently.

Hence the importance, in theories of this sort, of notions of adaptation:

> If . . . education has a collective function above all, if its object is to adapt the child to the social milieu in which he is destined to live . . . (the implication in the context is that this is so). (*Education and Sociology*.)

In their more extreme form, such views of adaptation seem to imply that the "original" personality can be dissolved into a set of social attributes without significant remainder, so that possible conflict between man and his social environment may be met through such adaptation. This may lead to the belief that social changes may be brought about which will meet man's needs more fully, or that harmonious adjustment between individual desire and social reality may prove possible. As Philip Rieff has pointed out:

> In liberal psychology from Bentham to Dewey, social organisation, not instinct, has become the source of and the limitation upon the perfectibility of human nature. (Freud: *The Mind of the Moralist.*)

Hence the frequently expressed need to reform society, so that by continual readjustments it is hoped that it will one day be possible to live "in uncomplicated adjustment to an uncomplicated world" (11).

In any formation of a "new" society, education, according to Mannheim (and Dewey) is to play a major role:

> . . . recent tendencies in education . . . no longer aim at forming an ideal person in general, but a persona which will probably be needed in the next stage of social development . . . through these efforts, the entire person is to be remoulded so that by pursuing these new types of personality it will be possible to transform the social structure in its psychological dimensions. (*Man and Society*, p. 203.)

By these means, he considers, "man can be transformed"—in this particular instance, man is to be made "fit for a society whose mainsprings are not competition and natural conflict". Then education becomes not only a matter of "communication of skill, knowledge and technique" but also one of "those *principia media* of character formation". (p. 203) It is instructive to consider how this transformation is to take place. It is, he considers, realistic to try to change a person within a

> dynamic environment, so that we can stimulate a change in his psychological reactions, conduct and ideas, with a continuous reference to the changing stimuli of the social background. Whenever a school is conceived of as an experimental community, this kind of planned transformation seems to be at work. (op. cit., pp. 204-205.)

If, then, "education is rightly understood only if we consider it as one of the techniques of influencing human behaviour and as one means of social control", it is necessary to formulate a "common strategy with the social agencies outside the school" (12). Mannheim died before the movement for comprehensive schooling in England

had grown to any great extent. Nevertheless, he would have approved of two features of such schooling akin to his interests—planning and the controlled environment through which it is thought changes in human behaviour can be brought about.

Underlying, then, both Mannheim's and Durkheim's views is the notion that man's "original" nature is highly "plastic"—a notion which has received a good deal of support from fairly recent anthropological discoveries, with the realisation that man is capable of adaptation to a wide variety of different culture patterns, dissolving his "essential" being into a set of local social characteristics. Such theorists hold a dynamic not a static view of man's nature; Mannheim, for instance, considers that

> . . . a static psychology which conceives of "man in general" on the basis of what man is to-day is on the wrong track. (*Man and Society*, p. 200.)

Man's nature is thus very much determined by the political society to which he happens to belong—the word "determined" is Mannheim's own:

> There is no variation of the human mind in itself, but reasonably enough only a variation determined by the situation

—though he admits that "there is, no doubt, a line beyond which innate hereditary traits and certain principles of social organisation hold sway"—for man's nature, though plastic, is, he admits, not infinitely so. When speaking of the role of psychology in helping to bring about the necessary human transformation for a planned society, Mannheim indicates that what he has in mind is a social psychology:

> It will investigate how thought and experience are formed by the social positions arising out of the social structure. With these observations as a beginning, it will be possible to mould personal intercourse in a more realistic way. (*Man and Society*, p. 202.)

Both Mannheim and Durkheim agree, then, in denying any conception of man which posits an *essential* nature. To this extent they are environmentalists—they believe in the force of Nurture. And they would agree that sociological analysis is an essential prerequisite to the formulation of educational aims. Individual psychology needs in large measure to be replaced by sociology and social psychology.

This belief in the overwhelming force of circumstances in the development of the individual plays an important part in the educational thinking of our times. It is a major factor in Soviet educational

policy; and, though it has not been pressed to such extremes in this country, most left-wing thinkers look to deleterious social conditions as the chief inhibiting agent in educational advancement. A belief in the equalising force of similar social conditions lies behind the "comprehensive" philosophy; and it has been shown that even the IQ, once thought to represent the native intelligence of the individual uncontaminated by family or environmental factors, is, in fact, to some degree affected by socio-cultural influences. Current concern for "wastage" amongst working class pupils is also influenced by the belief that the inhibiting influences are environmental.

These beliefs, of course, are used in the interests of recommended change. What is insufficiently realised is that whatever truth they contain may work as strongly in the direction of conservation. If the environment in which the early formative years are spent is likely to exercise a profound influence on the whole life history of the person concerned, the possibilities of readaptation in later life are made correspondingly more difficult. In any case, what can be changed most easily are the cognitive resources of the individual; what remains more impervious to alteration are the profounder emotional and unconscious aspects of the personality. In an age of increased social mobility, the cultural consequences of a hierarchy recruited increasingly on the basis of an expertise which involves little more than cognitive training are likely to be profound (13).

(*d*)

Finally, social theorists of education usually advocate certain differences in educational methodology, though the suggestion we shall examine is also characteristic of the "progressive" approach in general. The fact that society seems to be changing so rapidly is thought to necessitate the development of flexibility of outlook in children rather than the acquiring of knowledge. As Dewey puts it:

> With the advent of democracy and modern industrial conditions, it is impossible to foretell definitely just what civilization will be twenty years from now. Hence it is impossible to prepare the child for any precise set of conditions. To prepare him for the future life means to give him command of himself; it means so to train him that he will have the full and ready use of all his capacities.

Hence the current emphasis on skills and problem solving rather than on the presentation of logically ordered information. The Herbartian approach involved a teacher-centred mode of education, where it was assumed that the main job of the teacher was the orderly presentation

of subject-matter, so that the scholar could acquire knowledge which already existed. Implicit in such a method is a view of education which conceives of it in terms of the handing on of an already existing culture, of the acquiring of ready-made material, though made palatable, psychologically, by the skilled presentation of the teacher. The educative process here involves a building up, a gradual accretion of knowledge in carefully defined steps. The newer, socially oriented approach differs in two ways. In the first place, it conceives of learning in heuristic terms, so that the pupil acquires the skills which are inherent in the process of learning at least as much as the knowledge itself; to put it another way, he is learning *how* to learn as well as *what* to learn. But an essential part of this technique, which has characterised the whole approach to "active" learning, is the situational setting in which the learning is to take place: Dewey considers

—the only true education comes through the stimulation of the child's powers by the demands of the social situation in which he finds himself.

—the child should be stimulated and controlled in his work through the life of the community.

This approach is characteristic of Mannheim also:

> The essential changes in the methods of modern education spring from the discovery that the vital clue to the moulding of character and integration of personality lies in the mastery of the situation by the pupil. Only authoritarian teaching tries to develop isolated qualities, attitudes, and habits, and to instill ready-made knowledge so that the citizen may become evermore ready to respond to contralised command. Any education which aims at producing citizens who will be capable of independent judgment and spontaneous co-operation will train its pupils to respond to situations. The situation is the simplest context in which the child can be taught to use his own judgment and thus to face the elementary conflicts of everyday life. (*Man and Society*, p. 305.)

Here, indeed, there are two aspects involved. The young are helped to acquire knowledge in the traditional sense, but as a result of their own activity instead of through instruction by the teacher. Secondly, the element of control which is exercised in all learning situations comes, not from the teacher, but from the social situation itself:

> The basic control resides in the nature of the situations in which the young take part. In social situations the young have to refer their way of acting to what others are doing and make it fit in. This directs their action to a common result, and gives an understanding common to the participants. For all mean the same thing, even when performing different acts. This common understanding of the means and ends of action is the essence of

social control . . . . To achieve this internal control through identity of interest and understanding is the business of education. (Dewey.)

In other words, the teacher is to exercise control indirectly through the sorts of social situations which he allows the child to explore, not through imposed lesson-material. This, of course, leads easily to the replacement of the teacher's disciplinary authority by group consensus, to which we have already referred. Furthermore, there is implicit in such views of the educational importance of situations a tendency to envisage the school as encompassing more aspects of the child's personality than is involved in the normal learning processes—Mannheim speaks of the "moulding of character and integration of personality", phrases which conjure up notions related to the concept of the "whole" child.

There are several points to be made here. It is by no means always clear in expositions of this type whether the situations involved are always to be social or whether they may also sometimes be "physical" as well—as in scientific learning, for instance. Furthermore, the sorts of social situations involved may be of two kinds: social situations in which the learner is a participant—as in a group project—or situations of which he is simply an observer. Where the child is to learn as a participant, there are dangers that what may be induced is a conformism to accepted mores; a danger which Deweyism, for instance, has not always avoided (14). Also, as it is arguable that a school is an institution which exists primarily for the acquiring of certain arts of learning—being the only institution in our society in which such learning can take place—an important criterion by which the usefulness of the situational approach can be judged is effectiveness. In so far as the situational approach is relevant to the *sort* of learning which takes place, encourages inquiry within that learning situation, so that it stimulates not only learning but the ability to learn, it should be encouraged; but in so far as the learning is not furthered by the social situational approach—in the study of certain sorts of literature, for instance—there is no reason to consider that this approach should be encouraged simply for its by-product of promoting social co-operation or some other social desideratum. Otherwise the curriculum may become distorted because those subjects open to the situational approach may get undue stress. This again, then, is a matter for specific judgments to be made in specific contexts; but they should always be made with full realisation that the decisions we come to will very likely vary with the relative stress we place on different ends: whether, for

instance, we rate a certain level of social efficiency above individual learning acquisitions.

I have tried to reveal the underlying implications of the arguments I have encountered and to assess their validity rather than simply to subject them to destructive criticism. In general, what needs to be stressed is the necessity for specific decisions in particular situations. It seems to me that some such investigation as I have tried to carry out is very necessary and that this detailed exposition related to specific problems, is the way to set about it. *General* attempts to assess the relation of education and society seem to me doomed to failure because of the complexity of the problems involved; we can only examine the situation piece-meal in relation to particularised claims and demands.

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14. Cf. my essay on "John Dewey and Education", *Cambridge Journal*, V (June, 1952), pp. 531-552.

ROLES AND ANALOGIES IN THE TEACHING OF ENGLISH

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ANALOGY, in certain circumstances, may clarify the thing expressed, whilst standing apart from it. In other circumstances, a work of art for instance, it may take over and become the thing itself, the "objective correlative" which is all that we have. Frequently it is right and proper that this should happen; sometimes however imagery which ought to have only the first function assumes the second, with some unhappy results. If one considers analogies which have been offered for teaching one may observe both the illustrative function, and this function getting out of hand.

"Teaching", writes Gilbert Hignet in the *Art of Teaching*, "is not like inducing a chemical reaction; it is more like painting a picture or making a piece of music, or on a lower level like planting a garden or writing a friendly letter." Here are comparisons intended to bring out the creative, personal role of a teacher, and not intended to be pressed very far. But in the past the image of the garden was so influential as to blind men to its limitations. Educational writers deriving their inspiration ultimately from Rousseau were for a long time fascinated by the idea of children as "growing plants" and "organic wholes", and constructed their theories accordingly. It was not until quite late that it was pointed out (1) that plants do not learn, that they do not, except in Blyton-type romances, communicate; that they lack in other words two not unimportant human characteristics, which consequently received inadequate attention in much "progressive" education.

As applied to teachers analogies usually take the form of comparison with people in other occupations; and thus in one circumstance the teacher may be seen as playing one role, in another circumstance a different role. The fact that he may be unaware of this is not insignificant; "role-playing", largely unconscious, is being seen by many social psychologists to-day as one of the important influences on behaviour. But it is a matter of observation anyway

that arts students cannot add up, scientists cannot write, or read imaginative literature, women cannot mend fuses, in some measure at least because their roles forbid it. Roles are at once strengthening and disabling; strengthening because they give purpose and security; disabling because they exclude other purposes, create inflexibility and complacency.

The following analogies are concerned particularly with English teaching.

The Teacher as Grendel's Mother

The conception of the teacher as guardian of the word-hoard, a view as old as Plato. Literature is the great treasure, it is a "heritage", it "enshrines the values of people", it is the famous stone which changeth all to golden lads and girls. The strengths of such an idea are obvious. Its weaknesses are several. There is an unwillingness to temper the treasure to the unfleeced child (see the long pre-dominance of "established classics", particularly novels, in schools, a hostility to shortened versions, a narrowing of the canon, a distrust of modern writing). There is an unwillingness to consider the possi-bility that there may be other ways to truth than the Word (role of teacher as high priest). " 'In the beginning was the word, and the word was made flesh': let them illustrate that, if they can", cries one writer (2), hitting out at the auro-visual aids in education, and displaying a fine indifference to two thousand years of religious art. There is an unwillingness to examine any of the claims made for literature as an educative influence, though as a matter of fact nobody really knows what its effects are. And finally there is a denial that literature has any other value than its literary value (noticeable in the treatment of drama as a "text" and in a distrust of psychologically inspired movements in this field).

The Teacher as Sergeant-major

The conception of English as a discipline. The body-mind ana-logy is the fundamental image here, with a vocabulary of "exercises" and "drill" (there is a book called *Keep Fit Exercises in English*). This analogy has its dangers. In so far that "exercises" provide practice in a skill they are useful, but the mind is not so "exercised" that it becomes better able to tackle calculus, or for that matter English Composition. Before the turn of the century William James showed that the ancient belief that one could "discipline the mind" was highly suspect, and perhaps no one subscribes consciously to it to-

day, yet it lurks as an assumption in much English Language work, which, lacking intrinsic interest will yet "do the pupil good".

Literary criticism is often spoken of as the "essential discipline". "It trains, in a way no other discipline can, intelligence and sensibility together, cultivating a sensitivity of precision of response and a delicate integrity of intelligence—intelligence that integrates as well as analyses and must have pertinacity and staying power as well as delicacy" (3).

By way of clarification one may ask several questions.

Cultivating sensitivity and precision of response to *what*? To literature, certainly. To art?—to music?—to food and wine?—to people?—to animals? Are not these relationships better understood in terms of interest and motivation than in terms of discipline? Having pertinacity and staying power? To literature, certainly—but how far to, say, mathematics? (judging by the performance in this field of many people with a literary education, not very far). It trains . . . intelligence and sensitivity together? In approaching literature, certainly. In life?—do the head and heart of an English mistress act together in personal relationships better than those of a physics master? The writer of the passage quoted is of course well aware that literary discipline cannot be indefinitely generalised and speaks of it as applying to "*associated* work in other fields" (italics supplied). But roles are not built up wholly rationally. One is concerned to suggest that the use of the word "discipline" in contexts such as these to mean basically a body of study has given the old concept from a discredited faculty psychology a renewed life, and the role of English teacher as sergeant major or "disciplinarian" is thus confirmed by an illogical and unconscious process.

The Teacher as Sigmund Freud

Psycho-analysis has had a good deal of influence, particularly in the teaching of composition. That hitherto-harmless-looking exercise book has become a document of the soul expressing its deeper darker legends under such allegorical titles as Spring, A Visit to the Seaside, and My Life by a Three-penny Bit.

Analogies from morbid psychology applied to normal situations have obvious dangers. But it is too easy to reject them. Where they have proved useful is in drawing attention to the unconscious processes going on in any writing where the writer is really involved, and the importance of this for his development—a means of releasing conflicts and tensions, objectifying and coming to terms with

anxieties and hopes under conditions of safety, of interpreting experience. The studies of Marjorie Hourd are particularly valuable here (4). Further, the analogy suggests that the treatment of *symptoms* (e.g. by using *Remedial Exercises in English*, Book I, 17th impression) is not likely to affect some of the basic causes of poor English; and thus emphasis comes to be placed on the experiences of the pupils themselves, and only secondarily upon skills of English which are seen as emerging from, and as ways of coping with, these experiences.

The free associations of the psycho-analytic couch have their parallel in, for instance, Free Writing (connoted as in Dora Pym's book) (5). In this an evocative object, sound, sensation, is offered to the pupils without comment, the aim being to stir associations so as to launch them on a piece of imaginative writing without formal restraints, a device which has been found very useful with children inhibited by other methods of composition, and which often strikes out ideas and images of great beauty, especially when the stock responses to the stimulus have been worked through. That Free Writing only releases and does not enlarge experience, that it does not require this experience to be organised, that it could not therefore be the only method—these things will be admitted without being considered as detracting from its value.

This role, as others, fails when it is taken over too completely; when the exercise book becomes a case book; and when it is forgotten that one of the ends of speaking and writing is communication.

The Teacher as Group-psychotherapist

Just as the analogy for much composition work has been drawn from psycho-analysis so that for a recent trend in drama has been group psychotherapy of the kind associated with the name of the Viennese psychiatrist J. L. Moreno (6). Moreno developed "psychodrama" whereby a patient acted out his problems with the aid of other role-players; and from this came "sociodrama" whereby a group of people acted out a situation common to them as members of society. This has become a normal drama technique in many American high schools; situations (known as S.L.S.—standard life situations) might include an inter-cultural one, perhaps involving colour, and interview, a quarrel over money between husband and a housebound wife, a discussion between parents and children over smoking or pocket money; and so on. Students play parts different from those they would have in real life.

This "putting of oneself in the other man's shoes" is nowadays one important element in an education drama movement which may be conveniently described by its American title of "creative dramatics". Its starting point is play. It takes various forms, both in this country and America; but common to all is spontaneous creation on the part of the pupils individually and as a group, whether what is being created is a movement, or a dance to music, a mime, a play to a given story, a play evolved by discussion in groups, a standard life situation. In the literature of the subject the role of teacher as therapist is well to the fore with references to its "curative value" (7), rather like Aristotle's "purging" of pity and fear; but claims for it as an "art in itself" are offered no less insistently. The "art" is for the participants themselves for an audience is frowned upon; it is seen as not being opposed to the "scripted play" but complementary to it for clearly whatever insights are gained in spontaneous group creation they are not those of Sophocles or Shakespeare.

The Teacher as Actor-manager

The most obvious assumption of this role comes with the school play. Less obviously it is coming into the classroom with a certain reaction against the treatment of plays as "texts". Probably the day has gone by when children were regarded as RADA students and told to stand half-front to a non-existent audience; but certain analogies from the theatre prove useful in the main school classroom: that pace is important, and that a lesson which explains every word loses interest and loses the play; that producers seldom use every word of Shakespeare, and that Shakespeare's producers certainly didn't; that, in any case, actors "throw away" many lines in the interests of the truth of the whole; that plays were written to be acted, and are best understood in these terms (8).

The Teacher as Printer's Reader

This part requires that the teacher of English should regard each piece of work that he marks as needing "proof correction" so that every single mistake is indicated by an appropriate symbol. This role is traceable back to the days when the first English teachers in grammar schools were classics specialists used to the correction of unseens; and is confirmed by the high degree of conscientiousness of the teaching profession as a whole. It is thought of as the only really satisfactory way of bringing about an improvement in children's work ("they won't bother if you don't"). But it is open to serious

criticism on two counts: first, that it is highly destructive of the teacher's creative talents; and second, that it is not half so efficient as is commonly supposed. The children who receive back a composition in which outraged GRowls, SPits and hiSSes in profusion come at them from the margins, are at once bewildered and discouraged. It is unlikely that they will correct it all with understanding (even with yet another period to correct the corrections). Various more rational schemes have been suggested which take into account both the needs of the child and of the teacher, and ease the burden for both; they usually make a greater use of impression marking which research has shown to have a higher degree of reliability (9). So far such schemes have made little progress; the printer's reader continues his work into the small hours.

The Teacher as "Teacher"

This might seem the obvious role, the ideal self-image. Yet in one common connotation it represents the routine figure who has not the initiative to try out other roles. This figure reveals himself in cries for "good solid *teaching*" (i.e. facts); in criticism of "frills" (i.e. not facts), and demands that the pupils shall "really learn something" (i.e. facts). He has the support of many parents ("they don't *teach* them anything nowadays"); and many headmasters ("best G.C.E. results in the area"). He likes grammar, and has his own chair in the staff-room.

Roles and Analogies with Children

Roles for the teacher imply corresponding roles for the children. This in itself is a large subject—how far the teacher's attitude moulds the children into the image he has of them. One such role is the child as "Littleman" where pupils are encouraged to take adult parts; Caudwell Cook's original example was to regard them as "lecturers". The description "Littleman" was highly unfortunate and too easily became parodied as what one might call "the child as Peter Pan"; indeed the Play Way is still good for a sneer, being thought of as the equivalent of messing about (though Cook's definition of play as "doing anything with one's heart in it" goes straight to the centre of modern theories about learning).

Cook's terminology has been rejected but his example followed. Children are encouraged to think of themselves as novelists, dramatists, reporters, research workers, leader writers, interviewers; the "essay" becomes an article, a report, a survey. In these analogies

the writing for a known audience is implicit, the play is acted, the novel circulated. Such work has been very fruitful; but one notices anxiety in, for instance, critics of the proposed Use of English Papers, that such papers might test "journalistic techniques" rather than thought, feeling, content; and clearly approaches such as those mentioned *might* overemphasise techniques and triviality. On the other hand the common Honours School professional approach to the student as Literary Critic is so incredibly limited that its feed back into the schools may be much more damaging than any of these other adult roles.

In English grammar "disciplinary" images have long prevailed. P. Gurrey considers that the subject as normally taught is indefensible, but that there are possibilities for linguistics (10). In furthering this he uses a fresh analogy without deterrent associations—that of field study, into language as *used*, with meaning as the criterion. It will be interesting to see how far this takes the subject; for it will be sufficiently clear by now that the imagery of English teaching *can* have a truly poetic potency!

Conclusion

Roles may be imposed by the school. H. A. Thelen (11) presents some very interesting models—that of socratic discussion, that of the army, that of the football-team coach (any kind of persuasion to get results), and so on. Roles may be imposed by the subject in the manner described above. They can be very valuable, enabling one to see one's work imaginatively. But even the best of them have limitations; we have all met the English teacher as Actor (usually a Welshman) whose pupils spell and punctuate like a Bad Quarto. And the worst roles are pernicious. One should reject these and pass from one to another among the rest as they suit one's purpose. From this point of view the role of the English teacher is to have no role at all.

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POETRY PREFERENCES IN THE FOURTH YEAR OF THE SECONDARY SCHOOL

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THE present ever-increasing search for objective measurement and analysis presents a challenge to those whose interests lie with the emotionally toned subjects (even if they are only roused to prove that nothing can be proved objectively in the Arts). Bearing in mind the observations of psychologists concerning the development of interest in aesthetic subjects during adolescence, and the often contradictory views of teachers, it was thought that it would prove interesting to attempt to measure, as objectively as possible, the attitudes and preferences of these young people concerning poetry.

Previous work in this field is not prolific, the most notable names being those of Eysenck, Burt, Britton and Sussams. All the published research points to a hard core of logical reason behind the somewhat ephemeral and emotionally toned reactions to poetry. Thus urged on, this experiment was designed with certain clear cut aims in mind, and certain vague ones in the background. It was hoped to answer or to confirm other people's answers to the following questions:

1. Can one measure the appreciation of poetry?
2. Does the measuring give any indication of the type of poem which could be taught most successfully in school?
3. Is the appreciation of poetry related to the intelligence or to the sex of the child?
4. Is it related to the appreciation of a poem by the teacher?
5. How far is the child making a predetermined or biased judgment of poems in general?
6. Is the appreciation of poetry related to the school setting?
7. Are teachers able to estimate the response of their class to a particular poem?
8. Is the judgment of the teacher affected by his/her own personal response?

Six secondary schools were selected, or rather selected themselves, to take part in this investigation. They were chosen because the head teachers and the members of staff concerned were willing to co-operate. The main difficulty in finding schools appeared to spring from the fact that many teachers are reluctant to teach poetry to fourth year boys and girls. One might argue therefore that this sample was contaminated from the beginning, but that is a risk which had to be taken. All the schools were co-educational, and all the classes were mixed. This was a deliberately chosen condition for this experiment, since the investigator believed that the difference in response which might be due to sex, would be aggravated in a single sex school. Of the six schools, four were secondary modern schools, three of which had a G.C.E. or an R.S.A. stream, or both. The other two were grammar schools. The classes were representative of various streams within their schools, so that the intelligence range was a wide one. No backward or remedial classes were used on this occasion for obvious reasons. The schools varied in size, the smallest accommodating some 270 children, and the largest, perhaps a thousand. Geographically, each school was situated either in or near Birmingham, although the environments of the schools differed considerably. As far as age of school building is concerned there was a very wide divergence.

One other school was used, in addition to the six already mentioned, and has been treated both with and separately from the others. This school, which has given some very interesting, and possibly indicative results, was a college for blind boys. Wherever their results are particularly interesting, they will be mentioned separately, although since the class consisted of only seven boys, it would be foolhardy to draw any general conclusions from those results.

In selecting the poems there was some indecision about whether the poems should be ones which are not normally met with in the usual run of school anthologies. If unknown poems were used, it was likely that these poems would either be of poorer quality or would be less popular to begin with, while if the well-known poems were used, there would arise the fear of the children making a predetermined response to those poems which they knew. (It would seem, from certain of the results, that this fear was justified.) Finally it was decided to take a middle course, and while using poems to be found in school anthologies, lesser-used poems were selected. A preliminary list of a hundred poems was drawn up. Some three or four teachers of English indicated which ones they were accustomed to

using with their forms, and these poems were discarded. The number of poems finally used was kept low to avoid confusion and boredom. The experimenter attempted to select the poems in three categories of difficulty, the first containing poems with a direct appeal to the sense of rhythm or imagination and having an easily grasped theme or story; the second containing slightly more complicated poems in both form and content, and appealing to the emotions in some elementary way; the third category of poems was chosen for its more difficult content of both theme and vocabulary, and because the poems required thought and emotional sympathy from the hearer to grasp the poet's meaning. These categories were by no means rigid, nor was there any objective attempt to select poems to fit them. In the light of some of the results of this experiment, this might in fact, prove a worthwhile avenue of investigation.

The nine selected poems were:

1. "The Pool in the Rock"	W. De La Mare.
2. "A Boy's Hymn"	L. Scott.
3. "Port of Holy Peter"	J. Masefield.
4. "To Everything there is a season"	Ecclesiastes.
5. "The Squirrel"	I. Serrailier.
6. "Double, Double, Toil and Trouble"	W. Shakespeare.
7. "Inversnaid"	G. M. Hopkins.
8. "Child at a Drinking Fountain"	from *Punch*.
9. "Welsh Incident"	R. Graves.

The poems were put into random order and for the sake of objectivity were tape-recorded. Here again there was some indecision on the part of the experimenter, the crucial point being whether to sacrifice the personal communication of the poem for the sake of objectivity. However, since there were already a number of factors which might be considered contaminating, it was decided that objectivity must be the criterion. The problem which then became uppermost was, should the poems be presented by the same voice or not? For aesthetic reasons, in order to be properly fair to the poems, it was decided that mixed voices were necessary. Finally, three readers were used, a man and woman taking eight of the poems between them, and a Welshman reading the poem requiring a Welsh accent. Of the three readers, only the Welshman was accustomed to reading aloud, being a teacher, and this may be considered as a factor determining the popularity of the poem which he read; it was realised that

his very accent would tend to single out this poem, whether favourably or not remained to be seen.

Each class heard the three groups of poems in differing order, at varying intervals. The children had copies of the poems, which they were asked to keep to refer to until the end of the experiment, which spread over two or three, sometimes even four sessions. Deliberately the name of the poet was never mentioned, either in the recording or on the copy of the poem. After hearing a group of three poems the children were required to rate each poem on a five point scale, according to their own liking. After hearing and rating all the poems, the classes ranked the nine poems in order of preference. The teachers responsible for the English lessons took part in the rating and ranking of poems. They estimated the general response of the class to each poem and also put in their own personal response. Finally, the children completed an attitude to poetry test which was an adaptation of the Remmers Subject Attitude test. This test was deliberately left until all the other sheets had been completed and handed in.

The final data which were available for study included the following:

1. The children's ratings of the nine poems on a five point scale.
2. The children's rankings of the nine poems in order of preference.
3. The teachers' personal ratings of the poems, plus their estimate of the children's response.
4. The teachers' personal order of preference of the poems, plus their estimate of the children's response.
5. The children's responses to the attitude test.

There were some extra data which do not come within the scope of this paper, which included a questionnaire which the teachers completed concerning the general responsiveness of their classes to the English lesson and to poetry. This questionnaire was as much designed to probe the attitude of the teacher to the class, as the attitude of the class. The children also did some essay work concerning three wishes which they might be granted, and choosing a character with whom they could change places for a time.

Treatment of the results by rank correlation, analysis of variance and inspection of group profile graphs suggested the following conclusions:

Firstly, there was a clear order of preference among the nine poems, in the sample as a whole.

Correlation of the orders of preference obtained from the children's rankings and their ratings of the poems, showed that the children were very consistent. This indicates the seriousness with which the children treated the experiment, and the conscientious attempt at recording their true feelings.

Secondly, there was a sex factor influencing poem preferences. Poem 3, "Port of Holy Peter", was overwhelmingly popular, with both boys and girls. The poem, a simple story full of colour and action, held a universal appeal. In the same way, poem 9, "Welsh Incident" was surprisingly popular, especially with the boys, although it was rated second by the girls and obtained an overall position of second. This is a difficult poem to grasp at first, the humour being subtle rather than obvious. Yet, despite the seriousness with which adolescents treat most things, and the difficulty of the poem, it was so popular. Here, it is obvious that the reader must have caught the attention of the children with his intelligent and sensitive reading of the poem, and with his Welsh accent, of course!

Poem 8, "Child at a Drinking Fountain", was highly popular with the girls, not so with the boys. This poem, read by a woman, has as its central figure, a girl, and is a highly descriptive poem, full of simile and metaphor. It appeals perhaps to the greater maturity of the adolescent girl, and probably to the socially conditioned "maternal attitude", although in school 6 the boys favoured this poem and the possible reasons for this will be mentioned later. In school 2, where this poem was not popular, it is interesting to note that the correlation between the preferences of the sexes was high, while at the same time, the teacher concerned gave the best estimate of the response of his class as a whole, and as sex groups.

Similarly, poem 5, "The Squirrel", was favoured by the boys, but not by the girls. This poem was read by a man. Sussams concluded in his work, that animal poems were favoured by boys, not by girls, while girls he thought, favoured nature poems. At a pinch, one might put "Child at a Drinking Fountain" into the category of nature poetry.

Poem 2, "A Boy's Hymn", was favourably placed by both boys and girls, despite the variations between schools. The poem is a simple one, with an easily grasped theme, and form. The most intriguing result was the unpopularity of this poem with the blind boys—the reason perhaps being all too obvious, the second stanza of this poem is as follows:

God has filled with wonders the earth on which we dwell;
Man has learnt their powers and usefulness to tell:
Man has made his telephones, cars and aeroplanes—
But who made man? Why God made man, and God gave man his brains.

The boys of school 6, despite their anti-God, anti-Establishment attitudes, placed the poem at fifth!

Poem 7, "Inversnaid" was universally placed ninth, except for school 6 (a very interesting school, this!). This poem's unpopularity has obvious reasons—the difficult form of Hopkins with his unusual rhythm, the nature theme, lacking in colour or life—whether it be human or animal. For much the same reasons one imagines, poem 4, the reading from Ecclesiastes was disliked.

The peculiar reactions of school 6 could be put down to any one of a number of purely subjective factors, but it is interesting to note that (*a*) they were the only group with a woman teacher, (*b*) the boys of this class placed the "difficult" poems in the first three positions, (*c*) they were a good grammar school G.C.E. stream, (*d*) they had recently been studying figures of speech, and in addition many of them attended lunch hour readings. (The recent readings of "Under Milk Wood" had been very popular, particularly as there were two Welsh people on the staff.) Lastly, this school had the tests very near to their end of term, and at the start of the new term they were returning to different premises.

All the classes, except for school 1, knew the reading from *Macbeth*, and all, except for school 1, and the boys of school 6, placed the poem favourably. Again, in school 6, it turned out that the class had enjoyed the play, and had heard a good recording of that very scene, with sound effects, which would tend to put the recording used for the experiment into the shade! There will be further reference to this "predetermined" response later in this paper.

Finally, poem 1, "The Pool in the Rock", did not arouse strong feelings either way. Perhaps this is a fair reflection of the poem (and even possibly, of the poet's intentions).

The results obtained from the teachers were equally interesting. Collectively they favoured the reading from Ecclesiastes, the reading from *Macbeth* and "Welsh Incident". It is perhaps indicative of what either familiarity or education can do to appreciation when one notes that the first two of these are from the Bible and Shakespeare! The popularity of "Welsh Incident" probably lies in the humour and the rendering, although it is notable that this poem was specifically

attributed to Dylan Thomas in two cases, and one wonders how many more thought it was by him. The Hopkins poem, apart from appealing to the more mature adults, again is easily identified, and most likely, well-known.

Poem number 1, "The Pool in the Rock," was most probably disliked because of its lack of "depth". Similarly perhaps because of their very simplicity, "Port of Holy Peter" so popular with the children, and "A Boy's Hymn" were not favoured by the teachers. "A Boy's Hymn" with its a, a, b, b, rhyme scheme lays itself open to the suggestion of insincerity.

Finally, the poems so favoured by the sex groups, "The Squirrel" and "Child at a Drinking Fountain", were most probably the least well-known of the poems; and it may be that the teachers' placing of these poems in the middle—at about fifth and sixth, is a matter more of discretion than of taste.

The results, taking the staff and children as a whole, suggest that there is some developmental or maturity factor at work, and perhaps even a social one. There seems little evidence of the "interference" of intelligence. Teachers appeared to estimate the responses of their own classes very well, and since there was little correlation between their estimates, one is led to believe that they were looking for something peculiar to their own class. Their own preferences do not appear to affect their estimate of the children's responses, for example, in school 2, where the teacher's estimate of the class order of preference and the actual class response, had a correlation of 0·834, the teacher's personal order of preference and that of the children, had a correlation of only 0·267. (This is contrary to the suggestion of John Doe, who concluded that teachers were much influenced by their own feelings about a child, and could not rate him objectively, or from the point of view of other children.) One wonders whether, if teachers were not so accurate about children's preferences as opposed to their own, they would be such worthwhile teachers as these obviously were, and perhaps, the class responses would not be so favourable.

It is noteworthy that the school with the unusual responses, school 6, was the one where the teacher concerned—the only woman —failed completely to estimate the response of her class. Another interesting fact is that only one teacher, in school 5, was able to predict the response of the girls better than of the boys.

Finally, it is worth noting here that the scores on the attitude tests were evenly spread out. Of a possible range of scores from 1·1 to 6·9

the actual range was from 2·1 to 5·7. If one takes an arbitrary mid-point at 4·0, then, 52% of the children (47% of the boys and 59% of the girls) came above, with a favourable attitude to poetry, and 48% of the children (53% of the boys and 41% of the girls), came below, with a less favourable attitude.

There are a number of lines which suggest themselves as possible ones for further investigation. As suggested by Eysenck, the link between personality and poetry preference would be worth further investigation. In addition, following the results obtained from blind boys in this experiment, one might vary the sample, using perhaps deprived or delinquent children. One might vary the presentation of the poems having two groups and first teaching the poems to one group. It would be interesting to investigate further the effect, on response to a poem, of the sex of the reader and of the English teacher. However, perhaps the most informative piece of research would be a longitudinal survey of the development of attitude to poetry in schools of contasting types.

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BOOK NOTICES

EDMUND J. KING, *World Perspectives in Education* (Methuen, 30s., 380 pages).

IN an earlier volume (*Other Schools and Ours*) Dr King set himself the clearly defined task of offering his reader six "intimate case-studies of cultural systems actually at work" and claimed quite rightly that he had written a basic text-book and source book for students beginning to work in the field of comparative education. It is urged that this present volume be read in conjunction with the earlier one, for it is "both a book on Comparative Education, with emphasis on the 'problem approach', and it is a Principles of Education book, picking out the perennial concerns of educators so as to illustrate them with international examples and analyse them by experiments in the world's laboratory". I must confess that I distrust such writing—all sound and fury signifying nothing—and that I approached this book with considerable misgivings. To a certain extent I feel some of these misgivings fully justified. Yet on the other hand I have to acknowledge that Edmund King has the courage, the stamina and the perseverance to undertake a gigantic task that many of us working in the same field would jib at. Could I have made a better job of it? No, probably much worse. Would I ever have attempted it? Emphatically no, for I hope I know my limitations by now.

This is not to suggest that Dr King does not know his! He has an alert, quick and penetrating mind and he is an exuberant thinker. He is also a glutton for work. Ironically his many virtues militate against him when he comes to tackle a book of this scope and range. His exuberance so often gives the impression of loose thinking. He cannot forgo the *savant's* aside and parenthetical statement which often hold up the flow of the argument to the point of irritation. There *is* some loose thinking conditioned by the deliberately diffuse approach he adopts. The writing is uneven because he writes too quickly and with too facile a pen. He is led to make several sweeping and unfair assertions, notably on Catholicism, and on the Public Schools in England. And he just cannot equate Comparative Education with Principles of Education. Who can? The result is a kind of hotch-potch (an extremely valuable one), a comparative compendium or educationist's *vade mecum*. Dr King has sorted out for us a mass of miscellaneous information, almost to the point of indigestion, and the diet is so rich and varied that in the end we are more than replete. He would have done far better, in my view, to have severely disciplined himself to choose but a few major problems and to treat these in detail.

The planning of the book is excellent. After placing education in its proper social context and asking who is educated, what is the price of progress, and what are the culture conflicts set up, Dr King goes on in his third (and easily most important) section to trace the effect on the schools of the impact of technological change, of the problems of selection and differentiation, and to discuss problems of further or higher education and the recruitment and status of teachers. Section Four, dealing with ideologies and systems of control, and with the philosophical and psychological aspects is weak because it is thin and derivative—as indeed it must be. Section Five, "Teachers in a World of Change", has a new authoritative note, and the whole is rounded off with a pleasing essay on the evolution of the ideal of "The Gentleman" reprinted from the *Year Book of Education* for 1961. The bibliography is fully representative and up-to-date, and the index adequate.

VERNON MALLINSON

MICHAEL BASSEY, *School Science for Tomorrow's Citizens* (Pergamon Press, 10s.).

C. W. WOOD, *General Science* (Pergamon Press, 12s. 6d.).

G. W. MARR and R. C. LAYTON, *General Engineering Science* (Pergamon Press, 12s. 6d.).

K. AUSTWICK, *Equations and Graphs* (Pergamon Press, 17s. 6d.).

DR BASSEY'S book is concerned with the effect on science teaching of examination syllabuses, particularly their effect on boys and girls who are not likely to specialise in science. His purpose is to focus attention on science below O-level and "to demonstrate that the many pupils who do not later specialise gain little that is of lasting value".

It is true that our school science teaching lamentably fails to meet the needs of the present day. Many of our text-books are out of date in content and approach. They are tied to the great classical period of science in the nineteenth century and they echo the voice of the pure scientist who often had little reason to look outside his laboratory. Some of our teaching too is of poor quality using crude apparatus and even then not adequately stressing the essentials of scientific method.

The problems raised are far from simple and much experimentation will be needed in the next two or three decades in order to give science its proper place in school; to present it so that its intellectual content is fully recognised, and its methods understood.

This book then is a portent. It shows dissatisfaction and endeavours to contribute towards putting things right. Dr Bassey has collected a good deal of criticism from various sources and gives the results of a questionnaire he submitted to undergraduates in the Faculty of Arts of University College, London. In its one hundred pages many topics are treated; they include scientific method, scientific studies, syllabuses and the needs of

teachers. The result is that many ideas are put forward and superficially discussed; the treatment is bright but brittle and we do not get very far. Nevertheless the book can be recommended to science teachers (particularly those who have wide responsibility) and to all who are interested in the work of our schools—and that surely means most of us.

Mr Wood's *General Science* is a book of revision notes devised to cover the various syllabuses of General Science 1. Clearly Dr Bassey would not fully approve of the contents though like the present reviewer he might take the line that given present syllabuses and boys and girls to submit to them there is nothing intrinsically wrong in learning thoroughly the facts that have been presented by sound methods in laboratory and classroom. No teaching alas! is so good that retention over a considerable period of time is absolute and though too much factual matter can easily be included in a school course, it is generally true that the pupil who has the firmest grasp of the basic facts usually has also the flair for problem solving and the highest capacity for using his imagination. This means that there is a place, though a limited one, for a book of revision notes. The present volume of about one hundred and eighty pages is clear in type and exposition and generally accurate in treatment. It is also conventional and in the physics section, for example, among the seventy-eight diagrams there is only one which the reviewer did not meet (in slightly different form) when, over forty years ago, he studied physics in school.

General Engineering Science (*Vol. one*) is a straightforward introduction to selected parts of mechanics, properties of matter, heat and electricity. The treatment is formal, there are worked examples in the text and exercises at the end of every Section but one. The standard is that required for the first year (G.1) of the General Engineering Course.

Messrs Marr and Layton have written a book which is both up to date and workmanlike. Few words are wasted and there are not many inaccuracies. Perhaps it might be pointed out that Count [*sic*] Volta used brine and not sulphuric acid as the electrolyte in his voltaic pile. It is one of the astonishing features of many elementary science books that the historical information is so frequently inaccurate. Yet writers need only keep at their elbow for reference a work like Magie's *A Source Book in Physics*. If accuracy is important in measurement surely it is in history. This comment is not meant to reflect appreciably on Mr Marr and Mr Layton for their treatment makes no concession to history; they have no time scale, their facts and principles are there to assist engineers-to-be. This kind of approach is fair and once it is accepted the authors have carried out their task systematically and thoroughly. The young student who has grasped the material presented will have a reliable foundation on which to build. The book has a detailed table of contents but no index.

Mr Austwick's book *Equations and Graphs* covers the solving of simple simultaneous and quadratic equations, the manipulation of simple formula and the drawing of graphs of linear and quadratic functions. As the book

contains over two hundred pages it will be understood that the treatment is detailed. Nor does the book deal with applications, they are to be treated in separate volumes. Such a full treatment needs justification and Mr Austwick presents his book as being useful for individual study and for teachers when preparing their lessons. He takes the learner as it were by the hand and conducts him through the operations step by step pointing out the reasons for each one. The book reads like a tape recording of lessons in which the teacher's exposition is clear and detailed, with an occasional question inserted but no come-back from the listener. This treatment is very suited to the plodding individual student—and worthwhile too—but brighter types will want to push on much faster; to discover much for themselves and only verbalise it when in difficulty or when they want to explain to others.

The standards of printing and layout in all of these books is good; the diagrams are clear and the limp covers attractive to look at.

W. J. SPARROW

H. MADDOX, *How to Study* (Pan Books, 1963, 3s. 6d.).

DR HARRY MADDOX has produced a volume which every serious student, good or weak, would do well to own and use. While it will, undoubtedly, find its greatest market at the upper senior secondary school and under-graduate levels, it offers much of value also for graduate students and for those engaged in unsupervised correspondence courses or evening classes.

From almost all points of view the book is a good one. Unlike many rather glib how-to-study manuals its prescriptions are not in the form of a series of tabulated dicta; nor does it at any time resort to a variety of slick gimmicks or "aids". Dr Maddox also avoids the trap, into which so many authors on this subject have fallen, of failing to practise his own precepts. As he says in his chapter on "Learning and Remembering": "You must thoroughly understand what you are studying. If you really understand a subject not only do you remember it easily, but you can apply your knowledge in new situations." And that is the principle of teaching that he follows throughout. The reader learns not only what to do to improve his studying, but why these are good methods to follow. Reasoned argument or relevant research evidence, often detailed, invariably supports the suggestions made.

In like vein no extravagant claims are made that a weak student will become efficient overnight, nor that students will pass their examinations without doing an adequate amount of work. The approach is, if anything, on the cautious side. In a book of this sort it is extremely easy to make claims and proclaim maxims which in their generalised form become misleading and even harmful. It is a tribute to Dr Maddox's integrity as a scholar that he remains uncompromising in maintaining a careful, evalu-

ative attitude. What he does claim is that there are "certain general principles which you should know about, and which should enable you to work out your own personal methods and schemes of study more effectively, and with less trial and error". These principles are clearly elucidated and the claim fully substantiated. In order to collate these general principles the approach is, necessarily, primarily an eclectic one. Each chapter is, in effect, a compendium of sound and reliable practices garnered from English, Australian and American sources which are interwoven with observations from the author's own experience. Where the practices are non-British in origin their degree of applicability to English students' conditions is clearly indicated.

The coverage of topics is more extensive than usual. There are fourteen chapters which fall naturally into two parts. The first eight chapters relate to the general strategy behind good study techniques: the need to learn methods of study, plans and timetables, motives and habits, learning and remembering, reading, notes and lectures, examinations, thinking. The last six chapters are of a more specialised nature designed to assist students in more specific aspects of studying: group discussion and group work, writing English, simple mathematics, the physical environment, health and study, mental health.

While a sequential reading of the book is desirable initially, each chapter stands alone as an entity and can be read meaningfully as a separate unit. For those students who wish to carry out a quick revision or who, despite the author's injunctions to the contrary, want their advice in potted form a summary at the end of each chapter provides the means. For those who want to explore a particular topic a little further, most chapters have a few, well-selected references for further reading.

An interesting innovation, not previously met by the reviewer in how-to-study texts, is the chapter on group work. Here a thoughtful case is made out for the use of informal student-groups in improving a number of aspects of their study programme, particularly those relating to problem-solving. Practical suggestions for the organisation and conduct of such groups are given.

The chapter, "Writing English", provides an extremely useful set of hints and suggestions for the student who has difficulty in expressing himself simply yet unambiguously. It is worth remarking that again the author himself sets the pace. Throughout, "How-to-Study" is a model of clear, concise communication and one which is almost completely devoid of jargon.

The chapter on simple mathematics is somewhat at variance with the pattern of the other chapters. Developed from the standpoint that "in all the natural and social sciences, competence in elementary mathematics is becoming increasingly important" it provides a summarised version of the rules and principles of arithmetic and algebraic operations "for those who have perhaps done little mathematics for some years, and wish to renew

their knowledge of elementary mathematical operations". For the most part an extremely useful source of reference for those who need it, it is a great pity that its usefulness is marred, particularly in the section on indices, by a number of typographical and proof-reading oversights. These are all the more surprising in a book which otherwise has been carefully compiled and is noticeably lacking in those irritating errors which seem to be coming more and more commonplace in present-day book production.

That there should be a quite comprehensive subject index (unexpected largesse in a paperback) helps to make the book what it is—a valuable reference for the student who wants to take his work seriously.

While students are notoriously an impecunious lot it is very difficult to imagine that there will be any who, on exchanging 3s. 6d. for this volume, will feel that they haven't received full value for money.

K. J. McAdam

Vera Gray and Rachel Percival, *Music Movement and Mime for Children* (Oxford University Press, Amen House, Warwick Square, E.C.4, 1962, 15s. net).

In many primary schools the Music and Movement broadcasts of the B.B.C. are used regularly and in many cases they are an essential part of the curriculum. Much of the pioneer work in this field was carried out by Ann Driver and it is now generally accepted that these subjects can be taught together at the early stages. Musical facts are introduced through the medium of movement and the children are taught to appreciate such aspects as differences in instrumental tone and variations in rhythm. The emphasis is on music of good quality from the works of established composers, played by experts. The continuation of this work by Vera Gray and Rachel Percival shows certain interesting developments, not least of all in the movement aspects of the approach and their recent publication illustrates the current trends.

The book is well set out and it is evident that the technique of preparing programmes for sound radio has resulted in a clear exposition which should encourage those who may find the language of movement confusing. The numerous illustrations and practical examples are helpful and should give confidence to many who are feeling their way with this approach; the musical examples are set out simply for those who may feel that their own musical attainments are inadequate for the follow up of the B.B.C. programmes. In the introductory chapter on movement it is evident that Mr Laban's principles of movement are the basis and the authors present a simplified analysis of the use of Time, Weight and Space; the summary giving "ten points of departure" at the end of the chapter should be useful for quick reference. This approach to movement is then linked with a similar approach to music; for example the time element is related to rhythm and tempo, the space element to pitch and melody and there are some useful pointers to vocal improvisation and the use of percussion.

The main contribution of this handbook is in suggesting ways in which music and movement can be extended in the classroom. Many inexperienced teachers are likely to feel some sinking of the spirits as they hear the words "that ends to-day's recorded broadcast" and they realise that they have to rely on themselves for the ensuing week. The follow up lessons will provide practical help here and in addition there is a most useful appendix giving suggestions for lessons, suitable music and musical terms. The value of these is ultimately dependent on the ability and knowledge of the teacher and, as the authors suggest "the follow up chapters will provide some help towards developing the subject of your choice".

In arts subjects such as music and movement which demand a "live" teaching situation for the development of creative aspects, there are inevitably dangers in producing a handbook such as this, which may erroneously be used as a blueprint; detailed instructions on teaching method tend to produce stereotyped results, allowing little scope for the children's imagination or originality. It is only realistic, however, to view this hazard in relation to the present situation in primary schools. Until there is more specialist teaching at primary level, the onus lies on the general practitioner, whose efforts to meet this need may be the only provision made for the music, movement and drama education of this age group. This publication serves an essential purpose in supplying practical help for the non-specialist teacher; it may also have a stimulating effect on those with more expert knowledge and serve as a starting point for some original experimentation along similar lines to those outlined in this book.

C. D. ROBERTS

GAYEN AND OTHERS. *Research on Examinations : Report No. 1—Achievement in Mathematics* (1962). Sponsored by the Ministry of Education, Government of India, New Delhi.

THIS report is the first of a series on student achievements in the major subjects of Board and University examinations in India. The series of inquiries was initiated as a result of the University Education Commission of 1950 which recommended reform of examinations as the most needed educational reform.

In England where experienced Examination Boards employ University and school teachers as well as administrative staffs to set, mark and analyse comparable examinations, we have little cause nowadays for the kind of criticisms cited here. The writers find that in the compulsory paper for the School Final Examination the syllabus is unequally represented, many alternative questions cause confusion to both candidates and examiners; alternatives differ in subject matter and difficulty, and the variety of choices combined with a low pass mark enable a student ignorant of two thirds of the syllabus to scrape a pass. In addition, the administration of examinations is poor so that, for example, candidates are not reminded to

record their own numbers or those of the questions they attempt. Statistical analysis of students' responses show further weaknesses: there are too many questions at both extremes of difficulty with the result that discrimination between candidates of different ability is inadequate.

The authors suggest that the paper puts a premium on mechanical drilling as few questions test mathematical understanding. Their recommendations for reforms include: that the syllabus should be more descriptive and explicit, that choices between questions should be few so that candidates cannot pass without covering the syllabus, that questions should test understanding of mathematical concepts and that they should discriminate at different levels of difficulty. If so, it seems probable that a larger percentage of failures must be allowed to ensure that a pass represents knowledge of the whole syllabus; but a system of partial marks for partial knowledge would appear preferable to the all or nothing treatment proposed on pages 24 and 41.

In the case of additional mathematics, which is optional, it is suggested that more practical applications of mathematics should be set; most candidates for this paper intend to study more advanced science and technology. Specimen questions are provided for both papers. It is recommended that examining boards should not be so large that the number of candidates greatly exceeds ten thousand. As in England, very large numbers of candidates lead to unweildy examining panels with consequent difficulty in maintaining consistency in marking.

If the recommendations of this careful inquiry are followed many of the causes of present dissatisfaction will disappear; and, since teaching is influenced considerably by public examinations, review of future results on similar lines should ensure a steadily rising standard of achievement.

R. BEARD

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EDUCATIONAL REVIEW

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EDITORIAL

THE publication of an issue devoted to one particular topic is a departure from the customary practice of the *Review* but it is justified on this occasion by the importance of programmed learning techniques and the fact that their use in education will probably be widespread in a comparatively short time. These techniques have implications for all subjects and it is ultimately by their effectiveness here that they will be judged. Frequently they rationalise and reinforce existing practice; but on occasion they would seem to challenge it (for instance on the evidence printed here it is by no means incontrovertible that we must never offer misspellings to children in teaching them spelling, yet this has been commonly assumed). This issue should therefore be of interest to the subject teacher; and also to the research worker, for several papers are concerned to assess the value of different procedures.

All the research described has been carried out in the Birmingham University Education Department by staff, or members of the Diploma in Child Psychology course during the year 1962-3.

Associated with the issue and published at the same time is a special supplement, a *Handbook of Programmed Learning*, which is a guide to programming technique for those who wish to understand it, or to undertake it themselves. The production of a supplement is also a new venture for the *Review*: but—depending on its success—it might well be the first of a series devoted to various topics. At the present time when the horizons of education are expanding so vastly it is more than ever important that new ideas and research findings should be made cheaply and quickly available to make their contribution to educational decision and practice.

ANDREW M. WILKINSON

FOREIGN LANGUAGES

An Experimental Latin Programme for Beginners

by S. MORRIS

Lecturer in Education, University of Birmingham

1. The Prototype of Language Programming

The prototype of language programming is found in a mother's teaching her child to speak. The stimulus is the child's desire for material things or/and for approbation, or simply the need to exercise the vocal cords and lips. The response is an emitted sound. The response is shaped, through a multitude of trials, by the mother, each successive approximation to the correct response being rewarded by approval and so reinforced, each incorrect response being eliminated by disapproval. After many thousands of shaped responses the child's verbal behaviour is decisively changed; instead of uttering gibberish, it uses words to name objects and desires and relationships, connecting words in a manner understandable and acceptable to others. The child has learnt to speak its native language.

2. Direct Method and Language Laboratory

Direct Method language teaching has tried to reproduce this prototypal situation in the classroom and in so doing has revolutionised foreign language teaching. But Direct Method, basing itself on the "principles" of demonstration, imitation, repetition and association, stresses the pupil's correct reproduction of a given pattern or subpattern of speech, unlike the mother who begins with what responses the child offers and gradually shapes them into the desired words and patterns. For Direct Method as practised in schools is essentially a method of class teaching whereas the shaping of linguistic behaviour in its early stages is essentially a matter of direct influence of one person on another. The Direct Method class in which the class as a whole choruses, imitates etc. with apparent sureness while particular members of the class are completely at sea is not infrequently found. Direct Method as currently practised is unable to overcome the difficulties associated with all class teaching—uniform rate of progress irrespective of individual differences and rates of work, impossibility

of complete involvement of all members of the class, inadequate opportunities for individual responding and therefore inadequate check on the individual's learning. Direct Method class teaching teaches the group rather than the individual.

This deficiency has led to the development of the language laboratory by means of which the individual student listens and responds to the pre-recorded voice of his teacher. This opens up boundless possibilities in the oral/aural field, allows a strict control over the student's responses to be established and ensures that the acquisition of the desired linguistic skills is automatic. Few teachers, however, would advocate the use of the language laboratory on its own as a method of teaching a foreign language. It relies on only one set of stimuli, oral/aural, while leaving visual stimuli (words, drawings etc.) unused. It does not facilitate cross- and back-reference which many students find necessary in learning. It cannot provide the knowledge of structure necessary for the manipulation of language at an intermediate and advanced stage. It teaches the student the code; it does not teach him how to use it.

3. Criteria for a Programmed Language Course

A solution of the problems posed by Direct Method and language laboratory teaching may be found in the use of a programmed language course which incorporates oral/aural responding. Such a course might reasonably be expected to fulfill certain requirements:

(i) It should produce the desired changes in linguistic behaviour as defined in terms of pronunciation, intonation, vocabulary, morphology and syntax.

(ii) It should do this in the most economical, accurate and effective way, i.e. it should embody the most up-to-date methods and the results of experiment and research.

(iii) It should be productive, i.e. leading on to, and fitting in with, the next stage in language work.

With these general criteria as a frame of reference, a programmed Latin course covering the first year's work in a grammar school was devised. The "terminal behaviour" aimed at after the year's work may be defined as follows:

(i) Ability to pronounce and read Latin at the standard of syntactical complexity reached.

(ii) Acquisition of a vocabulary of some 500 words.

(iii) Syntactically, recognition and understanding of the ways in which Latin asks questions, expresses verbal actions in the present, modifies nouns by adjectives and relative clauses, modifies verbs by adverbs and noun phrases, shows plurality, expresses commands, expresses ideas of subject, object and complement, shows possession, compares one thing with another.

(iv) While the main skill required is to understand the Latin, a secondary skill is to apply vocabulary and syntax, to use Latin.

4. Descriptive Linguistic Approach

All of the above skills could have been developed in a variety of ways. Feasibly the traditional (grammatical) approach or the Direct Method could have been used. The traditional approach, however, geared to a pseudo-logical presentation of morphology and syntax and designed primarily to promote skill in turning English into Latin conflicts with the general aims of the present course; Direct Method, which leans heavily on personal demonstration and explanation by the teacher, does not lend itself readily to programming. A descriptive linguistic approach, as applied to Latin by Waldo Sweet (1), is adopted as being most in harmony with the aims of the present course. This approach, based on an analysis of the structure and functioning of Latin, presents the ways in which Latin expresses meaning as a series of contrasts (or "discriminations") (2) within the language, e.g. the morpheme (a minimum meaningful unit in a word) of the subject, *-s* (or a zero allomorph), contrasts with the morpheme of the object, *-m*; the morpheme of the third person singular of verbs *-t* contrasts with the morpheme of the third person plural, *-nt*; the structure of the clause in which the verb is active is contrasted with the structure in which the verb is passive; meaning of passive verbs is contrasted with that of deponent verbs etc. Similarity as well as contrast is stressed and similar structures and patterns are grouped for study. By means of transformation, expansion, substitution, question and answer the handling of the structures and patterns becomes automatic or semi-automatic. This approach with its fragmentation of the language into small units and the endless variety of practice thus offered is eminently suited to the techniques of programming.

5. Continuous, Meaningful Texts

However, as the main aim of this course is to read and understand Latin, it was felt desirable to present continuous Latin texts from the beginning. The following lay-out was designed to allow the text to be seen and read as a whole while at the same time being broken down into sentence units. (The answers are given in the margin of the opposite page.)

Text	*New Vocab.*	*Questions*
Post Romulum, sex reges in urbe Romā regnant et multa bona faciunt.	multa: many bona: good (deeds).	(1) Qui regnant? Sex reg-. (2) Quando regnant? Post Romulu-. (3) Ubi regnant? In urb- Rom-. (4) Quid faciunt? Mult- bon- faciunt. (5) Quot reges sunt post Romulum? S-.
Sed ultimus rex, Tarquinius Superbus, est vir malus et crudelis.	ultimus: last	(6) Quis est ultimus rex? T- S-. (7) Quis est Tarquinius Superbus? Ultimu- r-. (8) Qualis est Tarquinius? Mal- et crudel-. (9) Facitne Tarquinius bona? Minime, facit mal-.
Itaque Romani Tarquinium propter multas iniurias expellunt et duos consules creant.	propter (preposition +acc.): on account of iniuria: injustice creant: elect	(10) Qui Tarquinium expellunt? R-. (11) Quem expellunt Romani? Tarquini- expellunt. (12) Cur Romani Tarquinium expellunt? Propter mult- iniuri-. (13) Quid creant? Consul- creant. (14) Quot consules creant? D- consules creant.

The questions and answers further break down the sentences into their minimal units, e.g. Post Romulum, sex reges, in urbe Romā etc. The meaningful context remains but does not hamper the programming.

The continuous text was adopted after a consideration of the problem of meaningfulness in language programming. In this respect the wheel has turned full circle. Latin courses published half a century ago asked the student to translate into Latin: "The girl wounds the big dove and the small wolf with a spear." This type of content, linguistically meaningful but ridiculous and remote from the child's experience, has been heavily criticised and largely eliminated and has been replaced by material that is both meaningful and relevant to the learner's experience. This in its turn has come under fire particularly from American linguists. Writing of language program-

ming Theodore Mueller says: "When a structure . . . is subjected to careful analysis and divided into a great number of steps, it is no longer possible to maintain units which express some thought" (3); and Rand Morton writing of operant conditioning in second language learning: "We can include (meaning) as little or as much as we want, as long as it doesn't distract the student and therefore increase the time required to form the necessary habitual behaviour. But notice that meaning is not necessary for the response, nor for 'motivation' since the truly 'meaningful' thing is already there—the reinforcement for which he is working" (4). There seems to be a rather artificial dichotomy here between language and meaning. It is because the speaker wishes to express a certain thought or feeling that he uses a particular form of expression, a particular set of words, a particular syntactical organisation. The learner is learning in order to respond intelligently, in order to understand, to use the language. If the Latin is meaningful and relevant to the child's experience, the child feels at ease and no tension is set up between the text and the reader. If further the subject matter of the text is interesting, the child has an added reinforcement when he decodes the message. Of the various ways of presenting Latin, the continuous text (involving a story or a description) seemed most likely to involve the student most effectively.

6. Type of Programme

If there was doubt about the mode of presenting the Latin, there was no hesitation about the type of programme to be used. A linear type allows a multitude of responses to be elicited in a rapid, straightforward way, offers immediate confirmation, ensures a very high percentage of correct responses, enables a close control to be maintained over the student. It also allows changes and variations to be introduced so that the student does not become bored by over-repetition. Though inflexible for the student, the linear programme affords a great deal of freedom to the programmer—to recapitulate, develop, cross- and back-refer, introduce new material etc. whenever he desires. As the experimental evidence concerning the relative merits of written, spoken and thought responses is not as yet conclusive, spoken and thought responses are used in the Latin programme in dealing with the texts, where fairly rapid progress is desirable; written responses are required in the other parts of the programme. This variation in response mode may well be welcomed by the students in the course of working through a long programme. Again, the decision as to when to employ constructed response and when to use multiple

choice was made solely with reference to the learning task at any given point; multiple choice was found particularly useful in recapitulation, constructed response wherever there was some element, however slight, of problem solving. Multiple choice and constructed response, however, are complementary and overlapping in the mental operations involved. Research evidence to date would seem to allow the programmer a free hand in their use.

There has been some discussion among programmers of the relative value of the "ruleg" principle (rule before examples) and the "egrule" principle (examples before rule.) In this Latin programme examples are usually "given" before the rule, i.e. the student by his responses produces the completed examples and then is led on to produce the rule or generalisation. The following extract deals with the plural discrimination in verbs:

(1) Now let us look a little more closely at the endings of verbs: vir sede*t*: the man -s.		(1) sits
(2) Vir et canis sede*nt*: the man and the dog s-.	(3) Femina ambula*t*: the lady w-s.	(2) sit (3) walks
(4) Femina et filius ambula*nt*: the lady and her son w-.	(5) Canis es*t* in tabernā: the dog - in the shop.	(4) walk (5) is
(6) Canis et vir su*nt* in tabernā: the dog and the man - in the shop.	(7) Quis ambula*t*?: Who w-s? Qui ambula*nt*?: Who w-?	(6) are (7) walks, walk.
(8) You can see from these examples that sometimes the verb ends in the letter -,		(8) t
(9) and sometimes it ends in the two letters --.		(9) nt
(10) If the verb ends in -t, this shows that one/more than one person or thing is doing the action.		(10) one
(11) If the verb ends in -nt, this shows that one/more than one person or thing is doing the action.		(11) more than one
(12) If one person or thing does the action, the verb is singular/plural.		(12) singular
(13) If more than one person or thing does the action, the verb is singular/plural.		(13) plural
(14) Singular verbs in Latin end in -.		(14) t
(15) Plural verbs in Latin end in -. (N.B. We are dealing only with the 3rd persons of verbs—he, she, it, they: the other persons come later.)		(15) nt

In this way the student not only learns to make semi-automatic responses to the stimuli; he also learns to generalise structure so that he can apply his repertoire to new material.

7. Content of the Programme

Each chapter of the course, except revision chapters, has five sections:

(i) Text with vocabulary and questions in Latin (as section 5). The answers to the questions are programmed and are so designed as to force the student to reproduce the new vocabulary, morphology and syntax. But little is required at this stage of the chapter except recognition.

(ii) Morphology and Syntax section (simply called "Notes"). Here the new material seen in the text is analysed; the explanations are in English and are themselves programmed. Morphology and structure are generalised; practice is given in the new structure. The following extract deals with the Dative Case:

(1) This is the 5th and last main case. Vir cibum femin*ae* dat; The man gives food - the woman.	(2) Cui vir cibum dat? Femin-.	(1) to (2) Feminae
(3) Vir cibum femin*is* dat; the man gives food - the women.	(4) Quibus vir cibum dat? Femin-.	(3) to (4) Feminis
(5) Sanctus Georgius aquam equ*o* dat; St. George gives water - his horse.	(6) Cui sanctus Georgius aquam dat? Equ-.	(5) to (6) Equo
(7) Sanctus Georgius aquam equ*is* dat: St. George gives water - the horses.	(8) Quibus sanctus Georgius aquam dat? Equ-.	(7) to (8) Equis
(9) Rex filiam dracon*i* dat: The king gives his daughter - the dragon.	(10) Cui rex filiam dat? Dracon-.	(9) to (10) Draconi
(11) Rex filiam dracon*ibus* dat: The king gives his daughter - the dragons.	(12) Quibus rex filiam dat? Draconi-.	(11) to (12) Draconi-bus
(13) The main job of the Dative Case is to express the meaning -.		(13) to
(14) Obviously the word "*Da*tive" was given to this case because it is frequently found in company with the verb d-.		(14) dat
(15) But you will have noticed from the Text that the Dative Case is found with certain other verbs: Deus Georg*io* respondet: God replies - George.		(15) to
(16) Puella fabulam Georg*io* narrat: The girl tells the story - George.		(16) to
(17) Very often, then we find the pattern: A (subject) does (verb) something (object) to B (in D- case)		(17) Dative
(18) or: A (subject) speaks, replies etc. (verb) to B (in D- case)		(18) Dative

(iii) Vocabulary Revision. The new vocabulary seen previously in the text is presented in context and programmed.

(iv) Text Revision. The new structures are again presented in their Latin context in programmed form.

(v) Translation. A portion of the text is given in English, phrase, clause and sentence completions being called for, usually involving the new vocabulary and structures of the chapter.

The course has, as yet, no aural support from tape and is dependent on the teacher for pronunciation practice. Waldo Sweet's Course (5), designed for use in a language laboratory, represents the ideal solution. The vast majority of responses are recorded by the student on tape and receive immediate confirmation from the master tape; in this way the student repeats each response and has it confirmed 2-3 times; where necessary he makes a written response as well. This, coupled with extensive use of drawings, provides the maximum range of stimuli. Unfortunately the use of a language laboratory as an intrinsic part of the programme makes Sweet's programme unusable in all but a very few British schools.

8. The Experiment

The present Latin programme has undergone pilot tests with a small group of pupils and is now facing its major test with one class of 12-year-old girls and one class of 12-year-old boys in grammar schools. A small experimental study is being made to evaluate the importance in long-term programmed language learning of free as against controlled confirmation of responses. 16 of the pupils are using write-in boxes which reveal the answer only after the response has been made; the rest of the children have the answers in the opposite margins of the course and are free to look at them before responding.

The course will last throughout the present academic year and should provide, apart from the results of the small experiment and general results of effectiveness of the course, interesting information on the rôle of the teacher, teacher/pupil relationships and pupil attitudes to a lengthy course of programmed learning.

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ELECTRICITY

A Comparison between Linear and Branching Methods of Programming

by T. C. LARKIN

1. Introduction

Even though the field of teaching machines is not very old or very large, there has already developed what appears to be a relatively major dichotomy. On the one hand we have the group led by Crowder which supports intrinsic or branching programmes and on the other the group led by B. F. Skinner which favours extrinsic or linear programmes.

The linear programme is composed of small steps leading logically through the subject matter from topic to topic. In this type of programme, it is important that the student makes as few errors as possible. To this end the increments in information which the student is expected to absorb are small. This series of small steps or frames may be viewed as a sequence of stimuli sharing some elements from frame to frame. Through reinforcement, the probability of a correct response to those elements within a specific frame is increased; one then moves to the next frame. The probability of response to the next frame is higher than it otherwise would be because some elements are shared with the previous frame or frames, to which the response has already been conditioned. Thus the learner proceeds from the known to the unknown in accordance with the method of learning known as operant conditioning so forcefully promoted by B. F. Skinner.

The other basic type of programme was developed by Crowder. The very small steps or progressive approximations which are used in the linear programme are not used in the branching programme where a larger amount of the material to be learned may be included in each frame. In each frame, the student is presented with a problem and with several alternative answers, one of which is correct. When the student chooses an answer he is asked to move to a specified frame. This frame then tells him if his answer was incorrect and explains why it might have been so. The frame may then return the student to

the original problem which he has answered incorrectly, or it may direct him through a sub-programme—further instructing him in the basic knowledge presumed to be necessary for the problem he has answered incorrectly. In either case, the student is eventually returned to the missed item which he then, presumably, answers correctly. If he again chooses an incorrect alternative, a similar process is followed. Ultimately he is returned to the missed item and answers it correctly. He is then directed to the next frame in the programme where the same process may be repeated should he answer that item incorrectly.

Because it seems likely that either or both of these forms of programme may be used, in the near future in schools, it was thought that a comparative study of them would produce interesting and rewarding results. This study, briefly described below, compared the results of learning which had taken place when a group of secondary school children, aged about fourteen years, had learned by programmes. Half of the group used a branching programme and the other half used a linear programme. Both types of programme consisted of the same material, but in the construction of the programmes the material was adjusted to fit the requirements of the particular programme method.

Similar research had been done by Roe (1962) who found no significant difference between linear and branching methods except in time taken to learn. However, the following study, as well as being concerned with the relative merits of the two main methods of programming, takes into account how well the children of different abilities learn by each of the methods, and also how well they retain what they have learned.

A number of writers have suggested that learning from programmed materials is not related to intelligence. Porter (1958 and 1959), Ferster and Sapon (1958), and Shay (1961), who examined the relationship between intelligence and learning by programmes, all found no relationship. To investigate retention, Lambert, Miller and Wiley (1962) made a very thorough and convincing study. They used a long (843 frames) programme, learned by a large number of pupils and they found that retention was significantly associated with intelligence. However, in none of these studies on learning and retention was a comparison of the two major programming methods made.

It was decided to investigate also the possibilities of a sex difference or interaction with programme method or intelligence.

2. Method

A 242-frame linear programme ("Introduction to Electricity" by T. C. Larkin) was prepared in three sections in accordance with methods described by Smith (1959), Klaus (1961) and other writers. After several revisions and informal trials the programme was tried out on five children and found to have an error rate of 9%. The version used in the experiment gave an error rate of 7·5% with twenty children of nine to ten years. The branching version was prepared from the linear programme to preserve the same vocabulary and phraseology.

Sample frames are shown in figures 1 and 2.

Figure 1

54. The terminal where the current flows *from* the battery is called the *positive* . . . . . (terminal)
55. Marked on a battery near the . . . . . terminal you will not see the word positive; instead you may see the sign + (positive)
56. The terminal where the current *returns* to the battery is called the negative . . . . . (terminal)
57. Where the circuit is complete, the current flows from the positive terminal to the . . . . . terminal. (negative)

Figure 2

Page 10. No, I'm afraid you are wrong. Electricity would not flow through the wire if you attached it just to the negative terminal. The reason why the electric current would not flow is because:

(*a*) The wire should be attached to the positive terminal and not to the negative terminal. } Turn to Page 11

or

(*b*) The current is not making a circuit } Turn to Page 16

The sixty secondary school children were stratified within sexes into three ability levels and randomly assigned to linear and branching methods. Mean IQs are shown in Table I.

TABLE I

Ability Levels	*Linear*		*Branching*	
	Boys	*Girls*	*Boys*	*Girls*
I	115·4	119·8	116·8	119·4
II	104·2	106·6	102·4	108·8
III	94·8	91·0	94·2	102·4

The three sections of which each type of programme consisted, were given on consecutive mornings and a post-test consisting of fifteen constructed response items followed by fifteen multiple-choice items was given when they were completed. The sequence of item types was determined as a precaution after considering Postman and Rau's (1957) findings, with meaningful and nonsense verbal materials, that if a recognition test preceded a recall test, scores were increased on the latter, while the reverse order had no such effect.

3. Results

TABLE II

Mean Test Scores for First Post-test

Ability Levels	*Linear*		*Branching*	
	Boys	*Girls*	*Boys*	*Girls*
I	19·2	18·6	21·8	16·2
II	19·2	18·8	17·2	18·0
III	18·2	17·4	16·2	17·8

After subjecting the full list of test scores to analysis of variance, Table III was the result:

TABLE III

Source	*d.f.*	*Mean Square*	*F.*	*Significance Level*
Programme	1	6·33	—	N.S.
Sex	1	11·00	—	N.S.
Ability	2	13·00	—	N.S.
P × S	1	3·00	—	N.S.
P × A	2	3·33	—	N.S.
S × A	2	20·60	—	N.S.
P × S × A	2	17·40	—	N.S.
Within Cells	48	9·58		
Total	59			

4. Provisional Conclusions

These conclusions are based on the first post-test made immediately on the completion of the programme. From Table III, which shows quite an astonishing lack of significance between the test scores of the various sub-groups, we can conclude that the linear and branching programmes, both of which are entitled "Introduction to Electricity", are equally effective in producing learning in secondary school children of fourteen years of age, of IQ between 90 and 125, and of either sex. However, since the children work through the branching programme more quickly than through the linear pro-

gramme, the former type must be considered preferable because of its efficiency.

This first post-test was a short-term retention test. But has this test, given so quickly after the learning has taken place, really revealed the effectiveness of the programmes in inducing learning? Perhaps one method of programming has produced a more permanent memory trace than the other. Or, perhaps a particular sex or "ability level" is more able to retain what has been learned. The short-term retention test does not answer these questions. A later test was required. Accordingly, a second post-test, consisting of the same 30 questions, was administered 97 days after the first post-test. Mean scores on this test are given in Table IV.

TABLE IV

MEAN TEST SCORES FOR THE SECOND POST-TEST

Gains from first post-test in brackets

Ability Levels	*Linear*		*Branching*	
	Boys	*Girls*	*Boys*	*Girls*
I	21·8 (2·6)	20·0 (1·4)	25·6 (3·8)	18·8 (2·6)
II	18·6 (−0·6)	19·0 (0·2)	17·4 (0·2)	19·4 (1·4)
III	19·8 (1·6)	18·0 (0·6)	15·6 (0·6)	18·2 (0·4)

The subsequent analysis of these test scores (cf. Table V) proved that the first post test provided insufficient evidence of the effectiveness of learning in the group sub-divisions, after using these particular programmes.

TABLE V

ANALYSIS OF VARIANCE OF THE SCORES IN THE SECOND POST-TEST

Source	*d.f.*	*Mean Square*	*F.*	*Significance Level*
Programme	1	2·00	—	N.S.
Sex	1	12·10	—	N.S.
Ability	2	75·00	7·98	·01
P × S	1	0·45	—	N.S.
P × A	2	13·65	—	N.S.
S × A	2	44·20	4·7	·05
P × S × A	2	29·08	—	N.S.
Within Cells	48	9·38		
Total	59			

5. DISCUSSION AND CONCLUSIONS

As a result of the analysis of the scores in the second post test, our provisional conclusion must now be modified. Thus, the linear and branching programmes, entitled "Introduction to Electricity", are

equally effective in producing learning with secondary school children of about fourteen years of age, of IQ between 90 and 125, and of either sex, *if the learning is measured by a retention test administered immediately after the learning has taken place.* However, if the learning is measured after a longer period of time, say 97 days later, then the more intelligent boy is found not only to retain the learned material, but even to have increased it to such an extent that he can now produce significantly better test scores than his less able companions. On the other hand, there is still no significant difference between the test scores of girls of different abilities who learned by means of these programmes. Once again, the two types of programme appear to be equally effective in producing learning and permanency of memory trace.

Perhaps the most surprising feature of the results of the second post-test was the way in which many children, particularly boys of highest ability, scored higher than they had done in the first post-test. Not only did they not know that a second post-test was going to take place, but there was absolute assurance from the teachers in the school which the children attended, that no further instruction on the subject of electricity had been given between the two tests.

An increase in the learning of the material of the programme could have occurred by transfer of learning into everyday situations. The possibility that this has happened is supported by the fact that the boys in the highest ability group had increased their scores to such an extent that a sex by ability interaction was revealed in the analysis of the second post-test scores. Since scientific material, such as that included in the programmes, has greater affinity to boys' cultural rôles than girls', then more opportunities for transfer of learning and greater willingness to use such opportunities would occur with the boys than with the girls.

If this transfer of learning has taken place in favour of the boys, then the significant difference in test scores between the boys' ability groups may have been due to greater transfer of learning as well as greater powers of retention, with the more intelligent boys.

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SPELLING

The Relationship of Step Size to Ability and their Effects on Learning

by R. G. MIDDLETON

Introduction

Several writers (Porter, 1959; Ferster and Sapon, 1958; and Shay, 1960) have confirmed Skinner's original contention that there is little relationship between learning from a linear programme and the intellectual ability of the student, provided that the programmed materials are well suited to the range of pupils and comprise a careful sequence of small steps that allow few errors and are provided with maximum reinforcement. The suggestion is made that, if the steps are made sufficiently small, one programme will suit different ability levels, there being nothing disadvantageous to the brighter student in having to work quickly through easy material at his own speed. Counter to this is the belief that one can hardly sustain the interest and motivation of more able students if one insists upon their proceeding through what is, for them, unnecessarily drawn-out material.

It might be reasonably supposed that as step size is increased, or as the programmed task becomes more difficult, the relationship between intelligence and learning grows, the intellectually superior students being better endowed to deal with material that is less finely graded, and possibly being more highly motivated in addition.

This is not confirmed, however, by Shay, who used three programmes of different step size to cover fourth-grade work in roman numerals and found little relationship between step size and intelligence for various learning criteria.

Others (Goldbeck, 1960; Smith and Moore, 1962; and Austwick, 1962) have suggested that a very low error rate on a programme (such as might be ensured by providing minimal size steps) does not necessarily produce maximum achievement on criterion measures, which might serve better as programme evaluators. Provision of excessively small steps may lead to over-cueing and thus militate against effective learning.

The object of this study, therefore, was to compare the effects of both intelligence and two different step sizes on achievement, and to investigate their interrelationship. Expressed in null form the hypotheses were that there is no relationship between intelligence and step size on a teaching programme for either immediate learning or retention, and that neither of these criteria is significantly affected by variations in step size or ability.

Method

Programmes

The majority of words in the spelling programmes produced for this experiment were those most frequently misspelt from a list of 160 tested with the two experimental classes of third-year secondary modern girls. Included in addition were a few related words and words needed to amplify certain points.

The original 160 are considered to be within the spelling ability of an average child of this age, and many are common to such well-known spelling lists as those of Boyd, Schonell, Broadbent-Marshall, Hawker, and Fowler. Most may also be found in the 4000 words listed by Burns in his vocabulary study of secondary modern children. In short, all are words which children of this age should both understand and be able to spell, and, though intended essentially to improve spelling ability, the programmes may also be considered as aids to vocabulary development, especially since many words are embedded in explanatory, definitive, or demonstrative contexts. Their value in vocabulary extension was indeed demonstrated later by the frequency with which many of the programmed words appeared in the written work of children who had worked through the programmes.

The linear type of programme initially written for the experiment was submitted to small sample work-out by third-year girls (mean IQ 105), and revised on the basis of comments and responses. With modifications and extensions necessary in certain areas causing difficulty, the programme finally arrived at comprised 600 frames, with an average correct response rate exceeding 93%. This small step programme was then modified by the elimination of frames considered to be repetitive and redundant, and then submitted to sample work-out as before. An average correct response rate exceeding 90% was obtained. In its final form this larger step programme contained 415 frames. Redundancy and repetition were the sole criteria in deciding upon elimination of frames and hence in increasing step size. There

was no attempt to concentrate more material into frames by re-writing items.

Ideally, both forms of programme should have been administered to larger samples of students, under experimental conditions, with a view to further possible adjustments, but time did not permit this.

While many of the frames featured words in context, no single method of teaching spelling was used exclusively. Rather was the method eclectic, use being made of such diverse elements as prefixes, suffixes, common elements of form, word-building, syllabification, and such spelling rules as were considered of wide application and sufficiently free from exceptions.

The procedure adopted and methods of programming were based on Skinnerian principles, with few frames containing more than sixteen words and all but three requiring active student involvement in the form of overt responding without teacher assistance. Much use was made throughout of the "vanishing" technique, whereby props are gradually removed through successive frames in each set, with progression to a final "pay-off" frame in which, in this case, the complete word had to be supplied without the provision of clues.

Machines not being available, presentation of programmed material had to be in book form. That this is not necessarily disadvantageous has been proved by the studies of Eigen and Komoski (1960), Roe et al. (1960), Feldhusen and Birt (1960) and Holt and Mammock (1961), which all support books as being as effective as machines.

The programmes were duplicated on quarto-size paper and ring-bound to form booklets, the frames of the larger step programme being denoted by asterisks and not being abstracted for separate binding. The eight frames on each page were not numbered sequentially down the page, but arranged in horizontal format so that, after writing a response to a particular frame, the student could only proceed to the next by turning over the page. Although space was left in the frame for the answer to be inserted in context, it was felt that to make such programmes expendable when intended for classroom use would make them too expensive to have much appeal. Consequently, $2\frac{1}{2}$-inch answer slips were ring-bound into the programmes, interleaved between pages. These slips also served as masks for the correct answers, which were in the left-hand margin beside each frame, so that, after responding to a frame, the student could compare her answer with the correct one underneath, thus receiving immediate reinforcement. By reversing the slips, it was possible to use

them again—a further economy that can be recommended to teachers. This method overcame the disadvantages of the vertical format, where relevant answers and frames lie exposed on the same page, and those of the horizontal-type format in which correct answers are printed on the reverse of each sheet, providing extra cues and often mere copy items for the new frame which lies on the opposite page.

The method adopted worked quite well; the subjects showed little inclination to cheat (a possible drawback to any book presentation) by lifting the masking/answer slips before writing their responses, and the extra page-turning involved did not prove as tedious as one might have supposed.

Subjects

Chosen for the experiment were two classes of third-year girls from a secondary modern school built on the outskirts of Leicester on a post-war municipal housing development. Since their spelling was rather weak, it was felt that these programmes would have a utilitarian as well as an experimental value. Intelligence quotients ranged from 90 to 125.

Tests

The day before they were set to work on the programmes, the girls were given a pre-test of 80 words. The number actually covered by the programmes was considerably more than this when all derivatives and possibilities of transfer are taken into account, but these 80 were fully representative. The pre-test was orally administered, each word being first dictated and then embedded in an explanatory sentence before being dictated again. Order of words was entirely random, with no attempt being made at presentation according to degree of difficulty or to follow the order adopted in the programmes.

The same test, presented in the same way, served also as a post-test, and as a delayed post-test to measure retention. These were administered one day and thirty-six days respectively after the last programme session. An oral test was preferred as being more truly indicative of spelling ability, since it is without the cueing necessarily provided in a written test which is self-administered.

Procedure

Both classes were taught English by the same teacher and for this experiment were treated as an entity, comprising 60 girls, age range 13+ to 14+. By random selection, the girls were divided into two

groups of 30, one group to work through the small step programme of 600 frames (Group A), the other group to work through the larger step programme of 415 frames (Group B). The mean IQ of Group A was 108·97 ($\sigma = 10{\cdot}45$), while the mean IQ of Group B was 109·43 ($\sigma = 11{\cdot}49$).

Since it was impossible to abstract the experimental classes from the normal school time-table, programme sessions had to be confined to periods devoted to English. In effect, both classes worked on the programmes during double (80 minutes) periods distributed throughout the week, both mornings and afternoons.

After the programmes had been distributed on the first day, the teacher read the instruction page aloud, with the girls following the words. When all questions and difficulties had been dealt with, the classes were told to proceed through the programmes at their own rate to frame 75, this being taken as the end of the first unit. Group A were instructed to read through and answer all frames, Group B to read and answer only the starred items forming the larger step programme.

On subsequent days, the girls were told to begin by revising the last five frames worked through in the previous session before proceeding with the new material. In all eight periods were utilised in this way, each unit comprising on average 75 frames. On the completion of her daily assignment, each girl handed her booklet to the teacher, who recorded times taken.

A controlled, as opposed to an ad libitum, presentation of programmed materials was chosen as a matter of convenience and not because of any conviction that such a method was preferable. The fact that, for reasons previously explained, the post-test was an oral one militated against children working through the programmes completely self-paced from start to finish, since it would have been administratively impossible to have given each an oral test upon immediate completion of the programme. Alternatively, had an oral test been delayed, in an ad libitum presentation, until the last child had finished, the quicker ones might have been placed at a slight disadvantage, as some would have completed their programmes as long as three days before the test.

Results

To show that both programmes taught spelling effectively, the mean gains between pre-test and post-test were computed for each programme form. These are set down in Table I.

TABLE I

COMPARISON OF MEAN GAINS ON 80 WORDS TESTED

Programme Form	*Pre-test Mean*	*Post-test Mean*	*Mean Gain*
Small step	25·0	48·366	23·366
Larger step	28·1	46·933	18·83

If the two larger groups are stratified according to ability into sub-groups X (IQs ranging from 112 to 125) and Y (IQs 90 to 111), with 15 girls in each group, we have the following picture:

TABLE II

COMPARISON OF MEAN GAINS OF STRATIFIED GROUPS

	Small Step		*Larger Step*	
Means	*Ability Level X*	*Ability Level Y*	*Ability Level X*	*Ability Level Y*
Pre-test	28·133	21·87	30·533	25·666
Post-test	52·266	44·466	50·066	43·80
Gain	24·133	22·6	19·533	18·13

It will be appreciated that any analysis measuring achievement in terms of post-test scores alone, to the exclusion of pre-test differences, will lead to erroneous conclusions. Non-significant values of F are, in fact, obtained for all comparisons when this is done, but when an analysis is applied to data relating to gain, a value of F significant at the 5% level is obtained in favour of the small step programme. Data are set out in Table III.

TABLE III

ANALYSIS OF VARIANCE OF GAIN IN ACHIEVEMENT SCORES

Source of Variation	*Sums of Squares*	*df*	*ms*	*F*
Between	308·27	1	308·27	4·62*
Within	3869·13	58	66·709	
Total	4177·40	59		

* ·05 level of significance

This significance is not maintained, however, in an analysis of differences between pre-test and delayed post-test scores. Further small gains were made between post-test and delayed post-test by all programme groups, but the greatest mean gains were made by those working the larger step programme, thus reducing the overall difference between groups (Table IV).

TABLE IV

COMPARISON OF MEAN GAINS, IMMEDIATE AND OVERALL, OF STRATIFIED ABILITY GROUPS

	Small Step		*Larger Step*	
Mean Gain	*Level X*	*Level Y*	*Level X*	*Level Y*
Pre-Post	24·133	22·6	19·53	18·13
Post-Delayed	·333	1·66	1·133	3·066
Pre-Delayed	24·47	24·27	20·66	21·2

To investigate further the relationship between intelligence and other factors, the following correlations were obtained:

TABLE V

CORRELATIONS OF IQ WITH VARIOUS OTHER FACTORS

	Small Step Programme	*Larger Step Programme*
Pre-test scores	·3159	·1306
Post-test scores	·3211	·2380
Delayed test scores	·2577	·1393
Gain (Pre-Post)	·098	·254
Gain (Post-Delayed)	−·4541	−·2533
Time taken	·561	·5351

Table VI provides further information about average times taken by the stratified ability groups and helps to clarify the IQ/Time correlations given above.

TABLE VI

DATA RELATING TO TIME TAKEN BY STRATIFIED GROUPS

	Small Step Programme		*Larger Step Programme*	
Ability levels	*X*	*Y*	*X*	*Y*
Mean time taken	4 hrs. 42 mins.	3 hrs. 52 mins.	4 hrs. 10 mins.	3 hrs. 25 mins.
Range of time	3 hrs. 25 mins. to 5 hrs. 50 mins.	3 hrs. to 4 hrs. 45 mins.	3 hrs. 5 mins. to 4 hrs. 55 mins.	2 hrs. 55 mins. to 4 hrs. 25 mins.

DISCUSSION

Immediate gains made by all groups on both programmes are evidence of the effectiveness of programmed spelling materials. Further mean gains between post-test and delayed test lend support to previous findings that retention after programmed instruction is good.

The data obtained suggest that in programmes of this type and degree of difficulty, within the IQ range 90 to 125, there is little relationship between aptitude and amount learned, as measured by the

gain on pre-test scores. While the higher ability groups on each programme made the slightly higher gains, the differences are not significant.

If ability, as it is usually interpreted by intelligence test, has little effect on the amount learned by programmed instruction, the findings of this study suggest that size of step is much more important, since the difference between mean gains reached the 5% level of significance in favour of the small step programme. One might suppose, therefore, that Skinner is correct in suggesting that it is unnecessary to provide more than one programme for different levels of ability, and that the most suitable for all is one of minimal step size.

As might be expected, however, though mean gain increased with reduction of step size, the mean time to complete the programme also increased, although individual completion times varied considerably. The indications are, as Shay suggests, that one must provide for individual differences on the basis of factors other than ability.

The time factor must obviously play an important part in any consideration of whether to employ a small or larger step programme, since in certain circumstances it may be clearly uneconomic to spend a longer time merely to obtain a very small percentage increase. In this study, the average time taken to work through the small step programme was 4 hrs. 17 mins., an increase of 13·2% on the average time taken on the larger step programme. As this produced an increase of 24·1% in mean immediate gain, it might be supposed that, in this case, the expenditure of extra time was justified.

The fact that there is not so great a difference as one might have expected between the mean times taken to complete the two programme forms is, perhaps, partly accounted for by the inclusion of both programmes in the one booklet, the frames for the larger step programme being indicated by asterisks. This was prompted by economy of time, labour, and materials, but meant that the amount of page turning involved was the same for both programmes. Obviously preferable would have been separate booklets for each programme.

Though individual times varied a great deal, rather surprisingly, on both programmes, the mean completion time of the more able students exceeded that of the less able students. Whether one should attach much importance to this is open to question, since most of the girls in the higher IQ range were in the same class, and for reasons of school administration the programme sessions had to be fitted into the normal time-table. Though both classes had the same English teacher, there was undoubtedly a difference in class atmosphere and

attitude towards work. The girls in the higher ability range were working towards external examinations, tended to be more anxiety prone, and had a more meticulous and careful approach to their work. The other class was not subject to the same pressures. For these reasons one is reluctant also to attempt an interpretation of the delayed test results, which show a reduction in the difference between overall mean gains for the various sub-groups. Beyond the immediate experimental period of eight days, and in the time intervening between post and delayed tests, it was not possible to exercise the same control over the girls' classroom activities, and is likely that the girls in the lower ability class, not being subject to the same stresses and pressures, were able to spend more of their time on spelling activities. It is certainly true to say that the programmes had stimulated in them a desire to improve their spelling ability.

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GEOGRAPHY

Branching versus Linear Programming

by PAULINE E. HERRINGSHAW *and* J. H. HUNTER

1. Introduction

It is a controversial issue whether to adopt a branching or a linear method of programming in automated instruction. There seem to be two problems which require solution: (1) Is a linear constructed response programme more effective than a branching multiple choice programme with both younger or inexperienced and older learners? (2) Do particular subject materials fare better with constructed response than with multiple choice methods?

To study these problems two kinds of subject matter were programmed, in each case by two methods. The first was a list of words most of which were unfamiliar to the learners, the second was a conceptual subject, latitude and longitude. All four programmes were given to children in a junior school and also in a secondary school.

It proved impossible to construct a branching programme for the spelling list and this was prepared as a linear programme with a constructed response or, in the second case, a multiple choice mode of responding in which the learner is presented with several alternative answers and responds by choosing one of them. This is a feature of branching programmes. It was hoped that this comparison would at least throw some light on the question whether it is important to avoid showing pupils incorrect examples in teaching, e.g. spelling.

2. Spelling Programmes

(i) *Response Method*

The spelling list (common to both programmes) consisted of the following words:

world	parallel	imaginary	intersection
sphere	angle	centre	longitude
hemisphere	degree	surface	meridian
equator	earth	circumference	Greenwich
latitude	temperate	length	Observatory

It contains a mixture of words that are relatively both easy and difficult for children to spell, as for example, world, angle and earth, compared with parallel, Greenwich and imaginary.

The 32-page programme consisted of 160 frames with approximately 8 frames per word. Apart from in the introductory frames, a vanishing technique was adopted throughout. Each new word was introduced by a frame consisting of a definition plus the instruction to write out the word, e.g. (introducing the new word "latitude"):

38. Lines of *latitude* are imaginary lines round the world parallel to the Equator. Write the word LATITUDE.

In the next frame, further guidance as to spelling may then be given and the vanishing technique begun.

39. The letter "T" occurs twice in the word LATITUDE. Fill the missing letters in LA–I–UDE.

Here, the fact that the number of T's in the word has just been pointed out gives a further prompt.

Frames 40-46 consist of sentences with progressive vanishing of letters so that:

45. All places with the same L—— are at an equal distance from the equator. Fill in the missing letters.
46. The longest line of —— is the Equator itself. Fill in the necessary word. Check your answer, and, if you find that you have answered correctly the last *nine* frames, go on to Frame 49.

Here the word whole must be constructed. Furthermore, Frame 46 is an example of a technique used to shorten the programme for those getting correct answers. Frames 46-49 give further practice in writing the whole word.

(ii) *Linear Multiple Choice Method*

The 30-page programme consisted of 180 frames with approximately 9 frames per word.

As with the other spelling programme, each new word was introduced by a frame consisting of a definition but which was then followed by a multiple choice response, e.g.:

40. Lines of LATITUDE are imaginary lines encircling the world. Choose the correct spelling of the word LATITUDE. All lines of (1) latetude (2) latitude are parallel to the Equator.

The next frame gives additional guidance in spelling plus a multiple choice response.

41. These are three syllables (or parts) in the word LATITUDE as shown here LAT/I/TUDE. Complete the word LATITUDE in the
1 2 3
sentence below by choosing the correct spelling of the last syllable. The distance of a place south or north of the Equator is called its (1) LATITUED (2) LATITUDE.

Frames 42-49 give further examples but the number of choices is increased progressively to four, so that frame 49 reads:

49. Choose the correct word. The further away from the Equator we go, the shorter are the lines of (1) LATETUDE (2) LATITUDE (3) LATETUED (4) LATITUED.

Finally, in the last frame for each set, the word has to be constructed as in the previous type of programme. Here, frame 50 reads:

50. Read the following sentence carefully and supply the missing word. Lines of —— are imaginary lines round the world and they are parallel to the Equator.

3. LATITUDE/LONGITUDE PROGRAMMES

(i) *Linear Constructed Response Method*

This programme consisted of two sections, that on latitude having 113 frames and that on longitude 55 frames, presented in two booklets. Method of construction, lay-out, presentation and response are identical and follow the horizontal design used by Skinner with a variety of cueing methods being adopted. An extract from this programme is given below.

14. Just as latitude is measured in degrees, so too, is longitude measured in —— (degrees)

15. Because all measures of longitude are alike, no single one can be used as a "starting point" for measuring, so we have to choose one and call it 0°. The one chosen is the meridian of longitude that passes through Greenwich Observatory, close to London. (Diagram omitted)

16. The meridian of longitude chosen for 0° is the one that passes through Gr---w-ch Ob---------. (Greenwich Observatory)
17. Whilst the 0° parallel of latitude is the Equator, the 0° meridian of longitude is the meridian that passes through G——. (Greenwich)
18. Whilst latitude is measured North and South of the Equator, which is 0° of latitude, so longitude is measured East and West of G——, which is 0° of longitude. (Greenwich)
19. Latitude is measured in "degrees North or South", but *longitude* in "degrees E—— or W——". (East or West)
20. A place with a longitude of 16° East means that it is 16° East of G——. (Greenwich)
21. A place with a longitude of 40° West means that it is 40° —— of ——. (West of Greenwich)
22. Latitude is measured in degrees; so too, longitude is measured in ——. (degrees)

(ii) *Branching Multiple Choice Method*

The latitude programme consisted of 44 pages and the longitude 19 pages of scrambled text which might be described as being of simplified Crowder construction with a written response being made on a separate piece of paper.

The test is based as closely as possible on that used in the linear programme which was written first. The programme is simplified Crowder style because:

(*a*) With few exceptions, the responses allow only two choices to be made—a "right" or "wrong" answer.
(*b*) The programme directs the subject making an incorrect response to an explanation, followed in some cases by a further multiple choice question, but more complicated branching is avoided.

An example of a page of this programme follows.

We have now got the idea of the "world sphere" being divided around the middle by the Equator, an imaginary line dividing the world into Northern and Southern hemispheres.

LATITUDE tells us how far a place is North or South of the Equator. The distance of a place North or South of the Equator, is therefore, called its LATITUDE.

Imagine a slice cut off one hemisphere of the world, like this:

(diagram omitted)

Everywhere along the line is the same distance from the Equator.

This is a LINE OF LATITUDE in the Northern hemisphere. Because it is always the same distance from the Equator, we say that it is PARALLEL to the Equator.

Remember, we are talking about *imaginary lines.*

Question

If we know the latitude of Birmingham, we can tell how far it is away from:

(*a*) The Northern hemisphere—page 15
(*b*) The Equator—page 13

4. VALIDATION OF PROGRAMMES

During their construction the programmes were tried out on individual children and a test of validity was made with a sample of twelve boys and twelve girls of average intelligence aged between 9 years 6 months and 11 years. Equal numbers of boys and girls worked through each version of the spelling programmes both of which proved to have an error rate well below 5%. Pre-test scores were low but at the end of the programme average scores on the twenty-item test were close to the maximum and there was some improvement on retesting. There was little difference in time taken to complete the programmes.

The same procedure was followed with the linear and branching geography programmes both of which were found to have an error rate of less than 5%. Large gains were made on test scores with each method, the branching programme taking half as long to complete as the linear.

5. THE EXPERIMENT

The experiment was carried out in a junior and a secondary school in the same area of the West Midlands. In each school thirty boys and thirty girls were stratified into three ability levels on the basis of recently obtained Moray House Test IQs. They were then randomly assigned within each sub-group to programme methods. Mean IQs for both schools are shown in Tables I and II. The age of children in the junior school was between 10 and 11 and in the secondary school between 11 and 12.

TABLE I

MIDLAND JUNIOR SCHOOL

Ability level	*Constructed Response*		*Multiple Choice*	
	Boys	*Girls*	*Boys*	*Girls*
I	112·0	118·4	108·6	121·8
II	88·2	101·4	89·4	101·0
III	76·0	87·2	79·2	83·4

TABLE II

MIDLAND SECONDARY SCHOOL

Ability level	*Constructed Response*		*Multiple Choice*	
	Boys	*Girls*	*Boys*	*Girls*
I	96·8	103·2	101·8	101·2
II	89·4	94·6	86·6	95·4
III	76·8	85·8	71·4	82·0

It would be seen that the IQs covered a very wide range and the point must be stressed that none of the programmes were written with these particular children in mind or for children below average IQ. The programmes were considered by the writers to be far too difficult for the great majority of these children from both the point of view of the language of the programmes and the concepts involved.

The pre- and post-tests, with the exception of the spelling, were identical and consisted of six duplicated sheets administered throughout in the following order:

Spelling: 10 constructed response items
10 multiple choice items
Latitude: 14 constructed response items
Longitude: 14 multiple choice items

These were preceded by an oral test of spelling.

Before beginning each test a careful explanation of the mode of response required was given, and each test was collected as it was completed. The tests were not timed. The post-test applicable to each section of the Programme was given immediately that particular section had been completed. In the case of spelling, whilst the C.R. and M.C. test papers were given immediately on completion of the programme, a further oral test was given when the whole class had finished this. The work was completed in two consecutive days. Retention tests were given 10 days later and were administered by the school staff who adopted the procedure used in the post-tests.

A junior school class in Kent was also given the programmes on geography. There were thirty children aged on average 9 years 9 months with IQs ranging between 100 and 121. These children also were stratified into three ability levels and randomly assigned to programme methods.

6. Results: The Junior Schools

The data collected from the junior school in Kent will be presented first (Table III). It is children of this ability range rather than that of the Midland school for which the programmes were written. It should be noted that by not taking the spelling programmes they received no help from the explanation of words given in them. In this school, as in the Midland schools, answers were written whether they were constructed or selected.

TABLE III

Geography Test (28 items): Mean pre- and post-test scores and mean gains. Kent junior school

Ability level	*Linear*			*Branching*		
	Pre	*Post*	*Gain*	*Pre*	*Post*	*Gain*
I	8·6	26·9	18·3	8·25	24·8	16·55
II	7·0	22·5	15·5	4·27	20·9	16·63
III	5·15	21·0	15·85	3·3	17·3	14·0

An analysis of variance of the post-test scores revealed no significant difference between methods.

In the Midland school, where, it will be remembered, the IQs were much lower, scores were as shown in Tables IV and V. The spelling programmes are considered first.

TABLE IV

Spelling Test (20 items): Mean pre- and post- and retention test scores. Midland junior school

Ability level	*Constructed Response*				*Multiple Choice*			
	IQ	*Pre*	*Post*	*Ret*	*IQ*	*Pre*	*Post*	*Ret*
I B	112·0	14·0	16·8	17·4	108·6	11·0	18·4	16·6
G	118·4	13·0	20·0	19·0	121·8	12·0	20·0	19·2
II B	88·2	3·4	9·6	9·4	89·4	4·2	15·0	14·0
G	101·4	7·8	15·8	14·5	101·0	5·8	14·8	14·6
III B	76·0	1·6	7·0	7·0	79·2	0·8	5·4	5·4
G	87·2	5·0	12·2	12·8	83·4	7·0	15·4	13·2

In spite of the fact that in one group children were exposed to incorrect spellings of the words, the methods were not significantly different. There were however, significant ability level and sex differences. Since girls were superior in intelligence it is uncertain whether this is responsible for their higher scores. There were no significant interactions. An analysis of the retention test scores obtained ten days later gives the same result since there were ability level differences the correlation between IQ and immediate post-test score was calculated for each method group with the following result:

Constructed Response group $r = \cdot 68$ ($\cdot 01$ level)
Multiple Choice group $r = \cdot 71$ ($\cdot 01$ level)

On the geography programmes attainments were as given in Table V.

TABLE V

GEOGRAPHY TEST (28 ITEMS): MEAN PRE-, POST- AND RETENTION TEST SCORES. MIDLAND JUNIOR SCHOOL

Ability Levels	*Linear*				*Branching*			
	IQ	*Pre*	*Post*	*Ret*	*IQ*	*Pre*	*Post*	*Ret*
I B	112·0	8·2	14·6	16·5	108·6	6·4	16·4	14·6
G	118·4	6·2	15·0	17·8	121·8	8·4	21·6	18·0
II B	882·	2·8	7·8	8·0	89·4	4·4	7·4	8·4
G	76·0	4·0	7·6	7·4	101·0	6·8	6·2	12·6
III B	76·0	3·2	7·6	6·6	79·2	1·8	2·65	3·4
G	87·2	4·6	6·2	6·0	83·4	4·4	5·6	6·8

Again there is no overall difference between methods. There are, however, besides differences between ability levels ($\cdot 01$ level), significant interactions. The programme ability interaction ($\cdot 05$ level) indicates that the branching method is better than the linear for the brighter pupils but less effective with the duller. The other interaction shows that girls are on the whole better with the scrambled than the linear text, while boys are better with the linear than the branching programme. It will be observed that on retesting the differences disappeared except for those between ability levels.

Correlations between ability and score were again high:

Linear programme $r = \cdot 75$ ($\cdot 01$ level)
Branching programme $r = \cdot 86$ ($\cdot 01$ level)

7. Conclusions: The Junior Schools

The spelling programmes, which were given in one school only, were not differentiated on tests at the end of the programme of ten days later. The significant differences which appear are related to ability and sex. In the circumstances of the experiment with a wide range of intelligence it is hardly surprising that relatively high correlations with ability were obtained. Nevertheless it is clear that many children, even those with little aptitude or reading ability, learned from the programmes and retained what they had learned.

The scores following the geography programmes are more difficult to interpret. In the Kent school though no difference between methods was found there is a slight tendency in favour of the linear programme especially at the lowest level. This is rather clearer in the Midland school where, however, the branching version was better for brighter pupils and for girls, who were of course brighter. These interactions had disappeared ten days later.

The subject matter of the geography programmes—latitude and longitude, their measurement in angles, and some reference to climate —was probably of too difficult a conceptual level for many of the Midland children.

8. Results: The Secondary School

The spelling programmes were tested in the same way in this school. Mean scores are shown in Table VI.

TABLE VI

Spelling Test (20 items): Mean pre, post- and retention test scores. Secondary school

Ability Level	*Constructed Response*				*Multiple Choice*			
	IQ	*Pre*	*Post*	*Ret*	*IQ*	*Pre*	*Post*	*Ret*
I B	96·8	10·2	19·0	16·8	101·8	11·0	19·6	18·8
G	103·2	11·6	18·8	17·0	101·2	14·6	19·8	19·4
II B	89·4	10·8	17·0	15·8	88·6	5·8	17·5	13·0
G	94·6	6·2	15·4	15·2	95·4	11·4	19·0	17·0
III B	76·8	1·8	13·4	9·2	71·4	0·75	7·75	7·0
G	85·8	5·6	14·8	14·8	82·0	4·8	16·2	11·4

While no overall difference was found between methods there were significant interactions, notably programme and ability level, and programme and sex. Level III boys were poorer with multiple choice selection and while girls were better on the whole with the

constructed response mode. Sex and ability level differences were again significant. The same pattern occurred on retesting.

Correlations between IQ and score were:

Constructed Response programme $r = \cdot 54$ ($\cdot 01$ level)
Multiple Choice programme $r = \cdot 84$ ($\cdot 01$ level)

A more marked difference in performance occurred on testing the geography programmes as shown in the following table.

TABLE VII

GEOGRAPHY TEST (28 ITEMS): MEAN PRE- POST- AND RETENTION TEST SCORES. SECONDARY SCHOOL

		Linear				*Branching*		
Ability Level	*IQ*	*Pre*	*Post*	*Ret*	*IQ*	*Pre*	*Post*	*Ret*
I B	96·8	8·6	13·6	13·0	101·8	8·2	21·8	20·4
G	103·2	9·4	15·4	11·8	101·2	13·2	23·8	21·0
II B	89·4	9·0	17·0	15·0	88·6	8·4	17·75	9·8
G	94·6	5·6	10·6	10·8	95·4	5·6	10·6	11·8
III B	76·8	6·8	10·2	9·2	71·4	3·7	5·95	6·4
G	85·8	5·0	11·4	8·0	82·0	4·6	15·2	10·8

The branching programme is clearly better and this is entirely due to the superior performance of children in Level I having this programme. Analysis of retention test scores confirms that the branching programme was more successful for children of the "high" ability group but less so for the low ability children.

Correlations between IQ and score were:

Linear programme $r = \cdot 23$ (Not significant)
Branching programme $r = \cdot 67$ ($\cdot 01$ level)

9. CONCLUSIONS: THE SECONDARY SCHOOL

The linear constructed response spelling programme was more effective only for the least intelligent, reflected in the higher correlation coefficient for the multiple choice group. A distinct advantage for the branching programme is clear however on the geography test, though this is initially for the brightest of the children only: the more dull retain less after using this method. Girls were more successful with the branching programme on both occasions. It should be noted that on average they were more intelligent.

10. Discussion

In drawing inferences from these findings it must be borne in mind that, unlike those in some other experimental comparisons of programming methods the answers to all multiple choice questions were written. A further difference is that the branching programme restricted the number of alternatives on most questions to two.

Spelling proved to be the easier material to learn and differences between methods were slight at both the junior and secondary levels. The correlation between IQ and spelling was higher for the multiple choice group of the older children suggesting that ability is more necessary when discriminations have to be made.

Results from the Kent school demonstrate how much more effective the geography programme was for children who belong to the target population for whom the programme was written. Their motivation was also higher, to some extent because they were subjected to fewer tests but they were in any case probably keener to learn. For these children, while differences between programmes were not significant, the average was higher for the linear style. This method also, in fact, took longer to work through—a difference not observed with the other children. If the absence of the spelling programme experience can be ignored, comparison with the Midland school, where time differences were not marked, suggests that programmes may have to be prepared for particular groups of children. The tendency for girls to do better with multiple choice methods, not found for example by Larkin, reinforces this view. Level I of the Midland junior school should perhaps be compared with Level II or III in Kent.

In the secondary school where the branching programme was clearly better for the "high" group greater maturity appears to have raised the scores of children in the lower groups. Reading ability may be the factor involved.

A possible explanation that the branching programme is simply better written than the linear version seems impossible to maintain in view of the Kent findings.

The overall pattern of results may be characterised as follows. Where differences are apparent the constructed response programmes give, most often, a lower score at Level I and a higher score at Level III than the multiple choice programmes and this is maintained on retesting. On the whole, girls appear to perform better after multiple choice methods and where a difference occurs with the boys it is in favour of constructed response programmes.

ENGLISH SENTENCE CONSTRUCTION

The Effects of Mode of Response on Learning

by PAUL WIDLAKE

A LINEAR programme teaching aspects of sentence construction at "O" level was administered to second-year students in Warwickshire High Schools. All groups gained substantially but overt response-prompt and covert modes of response yielded no significant differences in the amounts learned or retained.

MODE OF RESPONSE

Mode of response has been among the most frequently investigated questions in programmed learning. No apology is offered for another traverse of this well-ploughed field, however. Krumboltz and Weisman (1) put it thus: "Although most studies so far reported have failed to support the importance of overt responding, the question should not be considered settled. Short programs with unknown error rates, brief criterion tests and small *N*'s, make it difficult to reject the null hypothesis."

Certain useful consequences flow from a rejection of Skinner's (2) position that a written response is essential in the programmed learning situation. The "hardware" would become less important, since an important feature of linear teaching machines is the concealment of the response from the student until the overt practice has been completed. If a programmed text-book were adopted there would be less need for elaborate techniques to minimise "cheating". Again, if covert responding were found to save a great deal of time (Krumboltz and Weisman (1)) over overt responding, and no significant differences were found in retention, this would raise further interesting questions. Finally, it might appear that different modes of response were appropriate to different types of material, to different levels of difficulty, or to various intelligence levels.

PREVIOUS WORK REVIEWED

Stolurow and Walker (1962) (3) and Lambert, Miller and Wiley (1962) (4) varied the mode of response by allowing one group merely to think of the response. They found no significant difference in the

amount learned. Similar results were obtained by Feldhusen and Birt (1962) (5) using a short (thirty-seven-frame) programme on teaching machines with eleven groups of thirty psychology students; when the frames were transferred into narrative form, no significant difference in learning was found.

Evans, Glaser and Homme (1960) (6) have reported two studies in which overtness of response was investigated. In neither case were significant differences found; the small number of subjects in each treatment group did not make for a very powerful test of the hypothesis, however.

Krumboltz and Weisman (1962) (1) assigned fifty-four undergraduates in random order to four groups; one which "mentally composed" each response, a reading group, a control which used a different programme altogether and a written response group. There was no significant difference at the first test but on a delayed test the written group was significantly higher.

Goldbeck and Campbell (1962) (7) compared overt, covert and reading response modes in two experiments with junior high school classes; the reading group surpassed the other groups on both immediate and ten-week retention, and in both experiments learned most per time taken.

Keislar and McNeil (1962) (8) gave two matched groups a three weeks' physical science course. The overt response group had to select their answers, the covert group merely observed passively. Both groups learned significantly more than an uninstructed control group, but the difference between overt and covert groups was not significant.

Thus, of these investigations only Krumboltz and Weisman have supported Holland (1960) in finding significantly in favour of a constructed response, and that only in a limited sense. Work by Briggs (1960), Goldbeck and Briggs (1960) Pressey (1960), Meyer (1960), Silverman and Alter (1960) fails to support Skinner and Holland. Roe, Massey, Weltman and Leeds (1960), moreover, found that a programmed text-book which did not require overt responses took significantly less time to complete than covert, with no loss in learning (9).

Hypotheses

The present experiment was designed to test three hypotheses:

1. That the amount learned from a programme does not differ significantly whatever the mode of response: overt, covert or response-prompt;

2. That there are no significant differences in the time taken to complete a programme when different modes of response are used;
3. That retention is not a function of mode of response.

The programme was duplicated by a chemical process and stapled into booklet form. There were 220 frames, including the test material at the conclusion of the programme.

The behaviour specified was that second-year "A" stream pupils should be able to recognise and construct the different kinds of sentences, simple, compound, compound-complex and to distinguish between clauses, phrases and simple sentences. This behaviour is not common among such pupils, as the pre-test results revealed.

Recognition of these speech units was established by frequent use of examples, rather than by attempted definition. Coleridge's dictum was kept in mind: "A *real* definition of a thing absolutely known is impossible." Jespersen's advice was adhered to: "In teaching elementary grammar, I should not begin by defining the several parts of speech, least of all by ordinary definitions which say so little, though seeming to say so much."

A great deal of effort went into the actual programme writing. Validation was carried out on a sample of subjects and the feed-back so obtained resulted in numerous changes and refinements. The final error rate was only 4·7% when the programme was used with the specified subjects—there was a sharp increase when "B" stream pupils were employed.

The frames were generally fairly short, though they often exceeded Skinner's limit of fifteen words (like his own *Analysis of Behaviour*). The scheme by which the "contextual aids" were organised was taken from Smith (14) with useful suggestions from Holland (15) and from the ruleg system of Glaser, Homme and Evans (16). Considerable use was made of "panels" or extracts.

Smith's scheme sets out the Methods of Programming under:

1. Introduction
2. The Web of Learning (techniques include repetition, various kinds of developmental sequences)
3. Prompts
4. Vanishing and Cue Reduction
5. Panels
6. Summation and Review

All the frames in the present programme were allotted to one of the headings.

It is felt right to offer some evidence of the validity of the programme, since so many reports leave one in great doubt as to what is, after all, the heart of the matter. (See Rothkopf (17); Roe, Case and Roe (18); Ferster and Sapon and Brown and Hodkinson's commentary (19).)

The technique known as vanishing was found to be particularly fruitful. A sample sequence follows. The letters in brackets refer to individual sentences in the panels, a method which worked very well.

"The man who was trying to leave the bus without paying his fare, was stopped by the conductor." The main clause is " * "; the subordinate clause, introduced by "who" is " * "	"The man was stopped by the conductor;" "who was trying to leave the bus without paying his fare."
4-37. If a sentence consists of a main clause and one or more subordinate clauses, it is a * sentence.	"complex"
4-38. "The dog barked and the boy jumped." Here are two simple sentences joined by "and" to make a * sentence.	"compound"
4-39. (M) consists of two simple sentences joined by "and". It is a * sentence.	"compound"
4-40. (N) also consists of two simple sentences joined by "and", so it, also, is a * sentence.	"compound"
4-41. But (N) contains a subordinate clause, "who glowered". A sentence with several clauses in it is called a * sentence.	"complex"
4-42. (N), then, is a sentence that is both com * and com * .	"complex and compound." *or* "compound and complex."
4-43. 4-44. A subordinate clause in (N) is * .	"who glowered"

Experimental Procedure and Results

Seventy-eight boys from the second year "A" stream of two Warwickshire High Schools were given the programme. In each case all the boys present were tested—there was no selection. Boys who were absent for any part of the programme were contacted individually, so that everyone who began the programme finished. Teachers were asked to avoid the subject matter of the programme during the whole twelve-week period.

Classes were divided randomly, using extracts from the Fisher and Yates tables of Random Numbers as the basis for allocation. Group A was the overt response group (response written then checked for correctness). Group B the response-prompt group (written response copied). Group C the covert response group (no written work; no restrictions on checking procedure).

These modes of response were strictly adhered to by all groups. The co-operation of subjects was easily obtained—they were extremely interested and worked well; and diligent supervision prevented backsliding.

The criterion tests were four in number and were given as a pre-test; immediate post-test (I.P.T.) which was included in the programme; short-term retention (Retention 1), after one week; and long-term retention (Retention 2), after ten weeks. Each test was of thirty items and included applications of the acquired knowledge. The items were in parallel form and extreme care was taken to ensure that they corresponded; the pre-test was also given, unknown to the subjects, as the second retention test.

Each subject's time was noted by means of a stop-watch, with the following results:

TABLE I

Time Taken by Groups
(*in minutes*)

	Maximum time taken	*Minimum time taken*	*Mean*
Group A	170	125	153
Group B	175	133	147
Group C	140	77	104

The other findings have been summarised in the tables below.

TABLE II

MEANS AND STANDARD DEVIATION FOR TREATMENT GROUPS: (1) PRE-TEST, (2) IMMEDIATE POST-TEST, (3) FIRST RETENTION, (4) SECOND RETENTION

	Pre-test (1)		*I.P.T.* (2)		*R.T.*1 (3)		*R.T.*2 (4)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	6·2	2·95	18·9	3·7	15·8	4·2	15·6	7·4
B	4·7	3·0	17·3	4·4	15·2	3·8	14·8	6·9
C	4·3	2·6	18·7	3·1	15·7	2·9	14·9	3·1

There were substantial gains by all groups but the amount learned by any one mode of response was not significantly different from the others.

ANALYSES OF VARIANCE

TABLE III

ANALYSES OF VARIANCE

Pre-test—Immediate Post-test (I.P.T.)

Source of variance	*SS*	*DF*	*MS*	*F*	
Between	52	2	26	·18	NS
Within	10877	75	145		
Total	10929	77			

TABLE IV

I.P.T.—Retention Test 1

Between	19	2	9·5	·11	NS
Within	6775	75	90·3		
Total	6794	77			

TABLE V

I.P.T.—Retention Test 2

Between	23	2	11·5	·40	NS
Within	2130	75	28·4		
Total	2153	77			

TABLE VI

R.T. 1—*R.T.* 2

Between	4·0	2·	2·0	·12	NS
Within	1280	75	17·1		
Total	1292	77			

Discussion

1. *Constructed and Mechanical Response Compared*

These results do not enable us to reject the first hypothesis. Mode of response has made no significant difference to the amount learned. The written, constructed response has not increased the amount learned, as compared with mere mechanical copying of responses. When the mean gains between the pre-test and immediate post-test are compared, we find:

Group A	12·7	Group B	12·6

Nor, as one might suppose, has the more mechanical process resulted in diminished retention. The mean gains from I.P.T. to R.1 and R.2 respectively were:

Group A	9·6	9·4
Group B	10·5	10·1

The mechanical process has actually given a slightly better retention. For this particular linear programme, with this age-group of boys, the amount learned was not significantly different whether or not they knew the correct response before they made their own response.

This was, indeed, unexpected; yet it confirms the reported findings reviewed earlier and may be explained along lines laid down by Cook and Spitzer (1960) (10), Angell and Lumsdaine (11), and Krumboltz and Bonawitz (12).

Krumboltz and Bonawitz suggested that it would follow from Guthrie, that the more frequently a desired response occurs in contiguity with the relevant stimulus, the greater the probability of a future response. Their attempt to isolate the effect of presenting the response in context rather than as a single word was not very successful. More fruitful was the approach of Cook and Spitzer. Cook and Kendler (1956) and Cook (1958) had shown that prompting (S→R→ overt practice) was superior to confirmation (S→overt practice→R). The 1960 experiment followed on this work and was intended to show the reasons for this superiority. On the basis of a theoretical model, they hypothesised that the superiority of prompting was due, in part at least, to a shorter between-term delay, the omission of overt practice of the response—or to both. They thought that, because the temporal interval was greater in confirmation than in prompting, the latter would give better learning; and also that overt practice during the interval would interfere with the essential S→R connexion and so

with learning from the response term itself. They concluded: (*a*) that overt practice did interfere with learning both the response term as such and with connecting it to its proper stimulus; (*b*) that delay between S→R interferes with the process of connecting a response to its proper stimulus, but has no very consistently reliable effect upon learning the response term as such.

Thus, although the present investigation did not show a superiority for response—prompt over confirmation, it is clear that the possibility of such a result exists. Angell and Lumsdaine followed up Cook and Spitzer. They demonstrated that a "listing procedure" interpolated throughout the experiment on every fourth trial actually made the "prompting" condition a "prompting and confirmation" condition, which, they found, was significantly more effective than prompting on all the trials.

2. *Time taken and Retention*

Table I shows a clear advantage to the covert group in terms of time taken. The individual who finished first in Group C was nearly a hundred minutes better off than the last boy to finish in the written response groups. A great deal of ground could be covered in that time—the individual could work through another programme or undertake parallel work in another medium. Thus great interest resides in the question of retention: Tables IV-VI show that there is no significant difference between the modes of response in this respect. The second hypothesis has to be rejected on this evidence: there *are* significant differences in the time involved. The third hypothesis is upheld: retention is not a function of mode of response—one would like to add, again, for this particular linear programme, with this particular population. It is well to emphasise the specificity of these findings, since there is so much confusion at present in this very new area of investigation. These results support the majority opinion, however, against Goldbeck and Campbell (7) (who reported a significant difference with their reading group) and Krumboltz and Weisman (1) (who found better retention with their written response group).

Conclusions

As regards practical applications of these findings, one can recommend that teachers and programmers need not be over-anxious about so-called "cheating" in linear programmes. In a well cued frame the response comes almost automatically, so that the reinforce-

ment is supplied whether or not overt confirmation is given. The best pupils hardly bother to check: this is common experience among adults in reading *The Analysis of Behaviour*. Further investigation is required, in which mode of response is linked with intelligence and attainment in the subject matter. It would also be interesting to know more about mode of response as compared with difficulty levels in the subject matter. Goldbeck (1960), for example, discovered an interaction between response mode and the difficulty level of a "discrete discourse" programme. The written response has the advantage that it enables one to say with certainty that the work has in fact been done; this is an asset not likely to be discarded by those in charge of less able and younger pupils, but Pressey has suggested other methods for checking the more capable students.

All the evidence points towards a flexible approach to the question of response mode. Dogmatism is to be avoided. As Silverman and Alter (1961) have put it, effectively if somewhat inelegantly: "What is called for, are more parametric studies which seek to establish functional relationships, and pinpoint the situations in which one technique is superior to another" (13).

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ARITHMETIC

Inductive versus Deductive Methods of Teaching Area by programmed Instruction

by MARION FOORD

1. Introduction

The experiment set out to compare two teaching methods by means of linear programming. The recent work in programmed learning has made more possible this type of research. Previously any comparison of methods has been open to the criticism that the results may have been influenced by the "teacher variable". Even in the situation where the same teacher teaches groups by different methods, it has been difficult to be sure that one of these methods has not been more congenial to the teacher, and, therefore, better taught. This investigation, therefore, started as an attempt to construct two linear programmes on the same subject, but with different teaching methods. Several other problems suggested themselves. An attempt was made to find out how far understanding could be developed by a programme, and which of the two programmes might be more successful from this point of view. It was also intended to find out whether ability affected results, and if one method might show more suitability for children of below average IQ.

Previous investigations have covered similar aspects of programming, notably Gagne and Brown (1961). This was an examination of concept learning, and whether it could be effected by programmed learning. They followed up Katona's (1940) description of card trick experiments, and tried to find which of three methods of programming a simple number series would give the most understanding. Their three methods were Rule and Example, Discovery, and Guided Discovery. Results showed that with a sample of 15-year-olds, the last method was the most successful, with Rule and Example the least effective and Discovery somewhere between the two. Kersh (1958, 1962) claims in contrast to these findings, that Discovery is superior to Guided Discovery, and attributes the result to the fact that the former method gives greater motivation.

The choice of subject matter for the programmes was influenced

by an experiment of Keislar (1959). This was an investigation into the development of understanding in arithmetic, using a programme in a film rater type of machine. His control group had no treatment, and he found that the experimental group were significantly better on the post-test—which is hardly surprising. His subject—area of rectangles—seems a worthwhile one for this type of investigation, as experience in school has shown that by no means all children find this easy to understand. The use of the knowledge of how to find an area often seems very poor in many children. In his experiment there was a very high correlation between IQ and score, although other experimenters, notably Ferster and Sapon (1958) found very little correlation.

2. Experiment and Method

Two linear programmes were constructed, aiming to teach the pupil how to find areas of rectangles and parallelograms. One of the programmes—referred to as the "Ruleg" programme, used a rule and example method. The rule of the new process was stated, and then following frames gave many examples, in order to teach the rule and lead to generalisation. The other programme, referred to as the "Guided Discovery" programme, used a different method. In this programme, the examples of the rule were introduced first, and only after many such examples, intended to lead the pupils to discover the rule, was the rule stated.

Sample frames may clarify the method. Frame 14 of the Ruleg programme is

> In a rectangle, opposite sides are equal. (*Diagram of rectangle omitted*)
> * and B are equal
> C and * are equal

Eight frames follow, giving similar examples.

In the Guided discovery programme, eight frames give examples of rectangles with opposite sides equal, and after such frames as:

> 17. A is equal to B (*Diagram of rectangle omitted*)
> C is equal to D
> The opposite sides are *

the rule is finally stated (frame 21):

> A rectangle has its opposite sides equal.

Revision of previous rules took place in each programme, before new rules were introduced. The steps between frames were made small, and the reading matter kept as easy as possible. It was aimed to cue each frame so that success was inevitable. Cues were in the form of mechanical prompts as in frame 17 above, contextual prompts, and prompts leading directly from the diagrams, as in 14. There were 118 frames in the Ruleg programme, and 128 frames in the G.D. programme.

Both programmes were presented in booklet form, each page of the booklet being one frame. Each programme was divided into four such booklets. The pupil was, in most frames, called upon to write a response, but both programmes included a few multiple choice items. The correct responses appeared in the top right-hand corner of the next page, so that the pupil could have immediate confirmation of success. The booklets had different coloured backs, so that the children could take their own sets, and work through them at their own pace. The writer supervised all the work. The following instructions were given to the groups: "Read through the page and then write your answer on the answer paper. Check to see if you were right by looking at the answer on the next page." In a preliminary talk about the programme it was stressed that the answers were meant to be easy, and that no record of marks would be kept. Copying of the answers directly from the next page certainly took place, especially among the 4th year below average group. Their results seem to indicate that this had little effect on learning. Error rate was less than 5%, but true assessment of this is difficult, because of the ease of looking ahead.

3. Post-test

The pre-test and post-test for the 4th year group was the same, and this was also the post-test for the 2nd year group. There were 27 questions in all, one question (no. 6) being left out of the final scoring, as every child in the 4th year got it right on the pre-test. Thirteen of these remaining 26 items were straightforward application of the rules learnt. Question 10 for example asked: "A rectangle has a length of 10 feet, and a height of 3 feet. What is its area?"

The other 13 questions were of the problem type. Eight of the total answers were of the multiple choice type, the others called for a constructed response.

An attitude test was also given, with such questions as:

Do you like this way of learning more than the usual way?
much more more about the same less much less
Do you think it is easier or harder than the lessons you usually have?

The children were also asked to write in their own words what they thought about the booklets.

4. Sample

Two whole year groups of junior children, the 4th year and the 2nd year, were used. There were 112 children in all. All the children attended the same school, situated on a council estate in a small Black Country town. Average age of the 4th year was 11 years 6 months, and of the 2nd year 9 years 1 month. They were of average socio-economic level, with few children from either very poor or very rich families. Each year group was given Raven's Standard Progressive Matrices A, B, C, D and E, and on the basis of the test they were divided into two groups in each year. They are termed "below average" and "above average". The above average children were then randomly assigned to a method group, so that one group became the "Ruleg" above average, and one the G.D. above average group. The below average groups were similarly divided, and the final pattern was of eight groups, with 14 subjects in each group.

Mean IQ

4th Year				*2nd Year*			
Ruleg		*G.D.*		*Ruleg*		*G.D.*	
+*	−	+	−	+	−	+	−
117·05	92·2	116·6	91·8	111·3	90·0	111·2	90·2

* + above average, − below average.

As the 4th year sample had had previous teaching on the subject, a pre-test was given. This was the same test used as post-test on both groups. No previous knowledge was assumed for the 2nd year group.

Before the programmes were finally given to the groups, a validation trial was run with children, 10 in number, average age 10·3, who were in the 4th year group, but who were too young to be promoted with the year. The error rate was below 5%, but looking forward at the answers certainly took place. The implication of this ease of "cheating" will be discussed in the summing up.

5. Administering the Programmes

Each group of children was able to do the tests and programmes

in its own classroom. Four periods were used for the 2nd year group, and five for the 4th year. The extra period was used for the pre-test. The school had individual desks, and these were spread out to avoid copying. No time limit was set, but it worked out that there was no child who did not complete two booklets, i.e. half the programme, in a period of 40 minutes duration.

TIME-TABLE

4th Years			*2nd Years*	
Class 1	*Class 2*		*Class 6*	*Class 7*
1st period a.m.	*2nd period a.m.*		*1st period a.m.*	*2nd period a.m.*
pre-tests		Monday		
programme—2 booklets		Tuesday	programme—2 booklets	
programme—2 booklets		Thursday	programme—2 booklets	
revision		Tuesday	revision	
post-test, attitude test		Wednesday	post-test, attitude test	

The statistical analysis consisted of the following procedures:

(i) An overall analysis of variance on the post-test scores of the whole sample
(ii) An analysis of variance of 4th year gains
(iii) An analysis of variance of 2nd year post-test scores
(iv) An analysis of variance of the "mechanical" questions in the post-test
(v) An analysis of variance of the "understanding" questions
(vi) A product moment correlation between IQ and raw score
(vii) A χ^2 test of the attitude test items

TABLE OF MEAN SCORES IN POST-TEST

Ruleg		*G.D.*		*Ruleg*		*G.D.*	
4th year				*2nd year*			
+	−	+	−	+	−	+	−
18·9	9·14	16·3	11·5	10·57	4·85	8·3	4·78

4TH YEAR GAINS

Ruleg		*G.D.*	
+	−	+	−
2·78	3·5	3·28	4·71

CORRELATION WITH IQ

Ruleg	*G.D.*	*Ruleg*	*G.D.*	*Overall*
4th Year		*2nd Year*		
·85	·52	·65	·62	·62

All these are significant at ·01 level.

TABLES OF ANALYSIS OF VARIANCE

1. *Overall Analysis—Post-test scores*

Source	*S.S.*	*d.f.*	*M.S.*	*F.*	*Significance*
Method	9	1	9	—	N.S.
Ability	799	1	799	40·8	·01
Age	1436	1	1436	73·3	·01
M. × Ability	172	1	172	8·77	·05
M. × Age	16	1	16	—	N.S.
Ab. × Age	21	1	21	1·07	N.S.
M. × Ab. × Age	34	1	34	1·74	N.S.
Error	2045	104	19·6		
	Total d.f.	111			

2. *4th Year gains*

Source	*S.S.*	*d.f.*	*M.S.*	*F.*	*Significance*
Method	10	1	10	1·13	N.S.
Ability	16	1	16	1·81	N.S.
M. × Ability	2	1	2	—	N.S.
Error	459	52	8·8		
	Total d.f.	55			

6. RESULTS

In the overall analysis of variance there was no significant difference in the scores of the two groups. Ability and age were significant factors. In the table for 4th year gains, the methods show no significant difference, and ability is not a significant factor. In all other cases, neither method was significantly superior to the other, but age and ability levels were very significant factors in attainment. In both the "mechanical" analysis, and the "understanding" analysis, there is a significant interaction between method and ability.

Ability showed a high correlation with raw scores, significant in each group at ·01 level.

CONCLUSIONS

The attitude test left no doubt that the children enjoyed the booklets. Several children considered it easier to understand, e.g. "I like doing it very much, because it is easier to understand" (Girl, 2nd year G.D. above average group), "It is much easier, the answer just comes into your head" (Boy, 2nd year Ruleg below average).

Some children liked the self checking: "I like it because you can check the answers yourself right away" (Girl, 4th year G.D. below average group). Others found this unnecessary: "I do not think the

answers should be on the next page" (Boy, 4th year Ruleg above average).

Seven out of the 121 children in the sample had very negative reactions. A very intelligent (IQ 135) boy in the 4th year Ruleg group said, "I do not like it at all. It is boring, and half the things I know already"—a statement not borne out by his scores. Even more emphatic was a girl in the 4th year G.D. below average group: "I think the work was terrible it made me have the stomach ache."

On the whole, however, the children enjoyed the booklets. There was no significant difference between the methods on the χ^2 tests. Perhaps the most telling comment during the work came from one 4th year boy, who, when given the time-table of programmes etc. said, "Good, we'll miss Arithmetic!" This was obviously not considered to be Arithmetic.

Perhaps the most interesting result is seen in the 4th year gains. Here there is no significant difference between the ability levels. In looking at the mean scores, the G.D. below average group gained an average of 4·71 which is 2·07 more than the average gain of the Ruleg above average group. The lowest gain was made by the above average group using the Ruleg programme. It is obvious that the below average group had more chance of gaining. But the fact remains that in the post-test scores, the G.D. below average group had a mean of 11·5, while the comparable Ruleg group had a mean score of 9·1. With the above average, the positions are reversed—the Ruleg group scored a mean of 18·9, while the G.D. group scored 16·2. It would appear that one can tentatively say that in this experiment, the G.D. programme seemed more appropriate for the lower IQ groups, and the Ruleg for the higher IQ groups of 4th year children.

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CHESS

A Study of the Relationship between Intelligence and Performance in a Programmed Learning Task

by S. W. CRESSWELL

Introduction

It is often held that learning ability and general intelligence are synonymous; given the same learning task, those learners who score highest in a test of general intelligence would usually be expected to perform best in a learning situation.

Few teachers of E.S.N. children would dissent from this statement. The present system of ascertainment of educational subnormality and the placement of children in special schools arises from the assumption that tests of general intelligence are reliable predictive measures of future performance, and therefore of learning ability.

It is somewhat surprising to find contrary conclusions arising from research into programmed learning.

After using programmed methods of instruction to teach spelling to elementary school children throughout an academic year, Porter (1959) found that there was essentially no relationship between intelligence scores and achievement in his experimental (programmed learning) groups, but found a significant positive relationship between control (traditionally taught) groups.

Ferster and Sapon (1958), using methods of programmed instruction to teach German to graduate students at Harvard University, reported an absence of relationship between IQ and achievement while Shay (1961), after investigating the relationship between step-size in a teaching programme and intelligence, found no significant relationship and concluded that if one exists, it is a small one.

Other findings seem to indicate that there is a relationship between intelligence and performance after a programmed learning task, but the present position is not clear and is perhaps best stated by Stolurow (1961): "Until new information is forthcoming there seems to be no need to prepare special programmes for learners who differ in general intelligence scores, provided they are all above the minimum level

required for learning the task." The present study is an attempt, in a small way, to provide new information.

The Experiment

For the experiment, a linear programme of the programmed textbook type was devised to teach the basic rules of chess; it was aimed at children aged 9-10 years as it was felt that the average 10-year-old's knowledge of chess would be relatively slight, thus giving ample scope for measurable improvement in performance, and ensuring that contamination of the experiment by normal teaching in school could easily be avoided.

The programme was written so that it could be read without undue difficulty by children with mechanical reading ages of between 9 and 10 years. This was assessed by having the programme read aloud by a succession of children whose reading ages were 9·5 years, and substituting easier words for those which created difficulty until reasonable ease of reading was achieved.

276 frames demanding 384 responses and containing 36 illustrations of chessmen and their moves made up the programme. It was tested with small groups of children aged 8+ to 11 and modified to give an error rate of 6·8%; this figure was confirmed in the experiment proper, when using 90 children an overall error rate of 6·9% was found.

The experiment was carried out at Tannersbrook Junior School, Southampton, and my thanks are due to Mr H. V. Merwood, the Headmaster, and his staff for their co-operation and help.

The school contains 450 children drawn from an urban area of mixed socio-economic background. 15 boys and 15 girls were selected at random from each of the 2nd, 3rd and 4th years at the school. Children from these school years were aged 8+, 9+ and 10+ respectively, and it was felt that if the programme was correctly aimed at the 9+ age group, variations in programme difficulty between groups should produce a high correlation between intelligence and performance in the 8-year-old group, less among the 9-year-olds, and still less for the 10-year-olds. In the event, this pattern was found among boys (see table of correlations) but did not appear among girls. This difference between boys and girls is dealt with later.

Children whose reading ages were under 8 years, and those who were known to be chess players, or admitted to a knowledge of chess, were rejected and further random selections made to fill their places.

Raven's Progressive Matrices were administered to the whole

sample of 90 children, and the sample stratified as under in terms of Raven's raw score, age and sex.

SAMPLE STRATIFIED ACCORDING TO INTELLIGENCE AND AGE

	8-9 *years*		9-10 *years*		10-11 *years*		
Ability level	B	G	B	G	B	G	*Overall Mean Scores*
High	34·2	39·6	46·8	37·6	48·8	45·8	42·2
Average	27·0	25·4	36·2	31·0	38·8	37·2	32·6
Low	14·2	11·2	21·2	25·8	31·2	25·0	21·6

Figures are mean Raven's raw scores.

The design places 5 children in each cell, giving 15 boys and 15 girls in each age group and 15 boys and 15 girls at each ability level.

As the whole sample of 90 children could not be accommodated at the same time in one room, it was dealt with in age groups, giving three groups of 30 children each. These sub-samples were each given a pre-test of chess knowledge and then embarked on the programmed learning task. All meetings were in the same room, children always occupied the same places, times of meeting were randomised between groups, and the experimenter was in charge throughout. The average length of session was 30 minutes and children were encouraged to work at their own speed. Times taken to complete the programme ranged from 2 hours 10 minutes to 7 hours 50 minutes, whilst the mean time for the whole sample was 4 hours 24 minutes.

Throughout the learning periods a high level of motivation existed, there were no discipline difficulties, and children appeared eager to commence and sorry to stop. Children were seated in the room according to ability groupings, and in each sub-sample members of the low ability group required more initial explanation of the method of working, but once the technique of confirming their responses was mastered and they were reassured that spelling did not matter, they displayed obvious pleasure, particularly in the early sessions, each time their answers proved to be correct. The high ability groups appeared to take success for granted from the beginning. Whilst this state of affairs was to be expected, it was pleasing to observe, and, of course, points to an obvious advantage in the use of programmed learning methods with less able children.

It was also interesting to note that as children became used to giving correct answers, they sought to base their aspirations on the number of frames completed. In spite of attempts to convince them that each should work at his own speed, some individuals, particularly in the 8-year group, continued to compare numbers of frames completed after each session.

Frames in the present programme were numbered consecutively from 1 to 276; it was thus easy for children to compare "progress," and it is felt that if numbering had started afresh on each page, this "group pacing" effect would have been reduced.

As each child finished working through the programme, he was given a missing-word type test, demanding 40 specific items of information which the programme had attempted to teach, e.g.

(*a*) The queen always starts the game on a —— of her own ——.
(*b*) Two chessmen which can move in straight lines over many squares are the —— and the ——.
(c) The chessman which moves in one direction all the time, but captures in another direction is the ——.

The test of chess knowledge given before the children worked through the programme revealed a uniformly low level throughout the sample; the results of this test were ignored and correlations were determined, using the scores obtained on the post-programme test only.

POST-PROGRAMME TEST—MEAN SCORES

(*Maximum score* 40)

	8-9 *years*		9-10 *years*		10-11 *years*		*Overall*		
	B	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*Whole Sample*
High	30·2	27·0	34·4	24·2	36·8	31·2	33·8	27·5	30·6
Average	25·8	21·4	29·4	24·2	31·2	21·8	28·8	22·5	25·6
Low	15·6	24·0	24·4	21·4	28·8	21·0	22·9	22·1	22·5
Overall	24·0		26·3		28·5		28·5	24·0	26·2

RAVEN'S RAW SCORE AND POST-TEST SCORE

Table of Correlation Co-efficients—Age Groups

	8-9 *years*	9-10 *years*	10-11 *years*	*Whole sample*
Boys	(15) ·7085 + +	(15) ·7043 + +	(15) ·5933 +	(45) ·7204 + +
Girls	(15) ·3209	(15) ·4370	(15) ·5983 +	(45) ·4074 + +
Overall	(30) ·4722 + +	(30) ·6132 + +	(30) ·6140 + +	(90) ·5831 + +

Table of Correlation Co-efficients—Ability Levels

	Boys	*Girls*	*Overall*
High	(15) ·5707 +	(15) ·6923 + +	(30) ·775 + +
Average	(15) ·3311	(15) ·2872	(30) ·3609 +
Low	(15) ·6387 +	(15) ·0421	(30) ·4039 +
Whole sample	(45) ·7204 + +	(45) ·4704 + +	(90) ·5831 + +

It will be seen that a very significant positive correlation was found between intelligence as represented by the Raven's raw scores, and attainment, measured by the post-programme test.

Although the correlation co-efficient for "all girls" is significant, it is much lower than that for "all boys," and this is reflected in the figures under age groups and ability levels. This may be due to a sex factor, arising from the attitude that chess is a male pastime; this could have created variations in motivation among the girls and affected their performance.

The programme attempted to teach simple ideas of attack on the chess king, but any teaching of defence against check or checkmate was deliberately omitted. It was hoped that by testing the children with very simple chess problems demanding defence of the king, a measure of transfer of learning after the programme could be obtained. A test was devised consisting of 9 simple printed chess problems, responses to which could be marked on a scale permitting a total of 15 marks for best responses to all 9 problems. This test was administered after the post-programme test of chess knowledge. Scores were generally low, the mean for the whole sample being 4·7, with that for all boys 5·6 and girls 3·9.

Correlation co-efficients were obtained between transfer scores and post-programme test scores, and between transfer scores and Raven's raw scores. The most important of these are set out as follows.

	Boys (45)	*Girls* (45)	*Overall* (90)
Transfer and post-test	·5397 + +	·066	·439 + +
Transfer and Raven's score	·4098 + +	·1221	·3143 + +

Whilst the boy/girl difference is most apparent, it seems that some transfer of learning did occur and that this is significantly correlated with intelligence and with performance after the programme.

Two weeks after the completion of the foregoing tests, the post-programme test was again given to the whole sample to measure retention. Scores were very similar to those obtained on the first occasion, with the low ability groups losing slightly more marks than the high ability groups in each age group. Generally, there appeared to be very little loss over the two weeks.

Slightly higher co-efficients were obtained when retention scores were correlated with Raven's raw scores.

COMPARATIVE TABLE OF CORRELATION COEFFICIENTS

	Raven's score: Retention score	*Raven's score: Post-test score*	*Raven's score: Reading Age*
Boys (45)	·7568 + +	·7204 + +	·7177 + +
Girls (45)	·5170 + +	·4074 + +	·7314 + +
Overall (90)	·6313 + +	·5831 + +	·655 + +

This would accord to a certain extent with the findings of Lambert, Miller and Wiley (1962), who found intelligence the only factor significantly associated with retention.

Reading ages were available for the sample; these were correlated with the post-programme test scores and highly significant correlations obtained (see table below). It is interesting to note the higher correlation in the case of the girls between Raven's score and reading age—it may be that the lower correlations obtained between intelligence and performance in their case arises from a difference in relationship between reading age and Raven's score. Unfortunately, time has not permitted this possibility to be investigated.

The expected variation of correlation coefficients between groups came out strongly for reading age and post-test score.

TABLE OF CORRELATIONS—READING AGE : POST-TEST SCORE

	8-9 *years*	9-10 *years*	10-11 *years*
Boys + Girls	·7517 + +	·6058 + +	·5477 + +

The decrease in correlation coefficient from younger to older children clearly reflects the increasing importance of reading age in constructing programmes for younger children.

An investigation was also carried out into the number of response errors made by the sample in working through the programme. This was done by randomly selecting two cases from each cell in the experimental design, to give a sub-sample of 36 cases. Errors were counted and the mean percentage of error at each ability level calculated.

PERCENTAGE ERROR—PROGRAMME RESPONSES

	Boys	*Girls*	*Overall*
High	5·0	1·6	3·3
Average	8·2	7·2	7·7
Low	10·3	8·6	9·5
Totals	7·8	5·8	6·8

Correlations between number of errors and post-programme test score were obtained for the 36 cases in the sub-sample. In the case of the boys, a significant (·05 level) negative correlation – ·5536 was found; the girls' errors correlated – ·2941 (not significant) while the overall correlation co-efficient was – ·3775 (significant ·05 level).

It appears that number of errors increased as intelligence decreased (see table of percentage error) and that performance attained was negatively correlated with number of errors made. This last

would appear to support Skinner's contention that error-rate should be reduced to a minimum in the construction of a linear programme.

A survey of the children's attitudes to various aspects of programmed instruction was made after the test of transfer was administered. Results are given below.

Question	*No. of Responses*			
	A lot	*A little*	*No*	*No Response*
(1) Did you like this way of learning?	65	17	1	7
(2) Did you copy answers?	0	43	34	13
(3) Did you like working at your own speed?	59	19	3	9
(4) Did you like learning chess in this way?	77	6	0	7
(5) Was the work difficult?	1	69	13	7
(6) Do you think you learned more than usual?	65	15	2	8

The above responses show a positive attitude towards both programmed learning and chess, but written comments by some children of the "I liked this because I missed Arithmetic" variety, make it dangerous to draw conclusions. During the lessons, however, it was obvious that many of the children forgot that they were missing arithmetic etc. and enjoyed what they were doing. How much of this was due to novelty it is, of course, impossible to say, but in the writer's opinion, after every possible allowance was made for novelty and other factors, the pleasure of knowing at once if the response was correct played a part in the high level of motivation which remained throughout the experiment.

The fact that no child admitted to copying "a lot" makes it likely that some of the 43 children who copied "a little" were being unduly modest. The cheating refers to actual work on the programme; as children finished this individually it was possible to isolate them for the tests, and no cheating could have occurred. The effect of copying during a programmed learning task has been investigated; Widlake (1963) found that this made no difference to performance.

Conclusions

A highly significant positive correlation between intelligence and attainment was found.

It is considered that this occurred because the programmed task was sufficiently difficult to demand the full use of available intellectual ability by a majority of individuals in the sample. Thus post-programme test scores were widely spread, with intelligence a major factor in their distribution.

This suggestion also arises from the work of Keislar (1959), who found a significant correlation between intelligence and gain in achievement when using a programme which proved to be more difficult than expected.

In the questionnaire to assess attitude, 70 children out of 83 who responded to the "difficulty" question found the work either very, or slightly, difficult. In spite of this, the frame error rate was only 6·9%. It may be that much more than simple error rate should be considered in the construction of programmes if we wish to demand the fullest use of the learner's intelligence.

So far as the present study is concerned, there would appear to be some reason for investigation into methods of assessing and measuring programme difficulty as related to intelligence. If this could be done, then a satisfactory programme might prove to be that in which the best compromise was reached between maximum difficulty level and minimum error rate.

One explanation of the small correlations found in some other studies could be that programmed instruction can make possible the learning of certain material at an earlier stage of mental development than can traditional methods. This would tend to vitiate the very norms upon which our present assessments of intelligence are based, and thus affect correlations between the "new" attainment and "old" intelligence test results. At present this is a rather far-fetched digression, but it could have interesting implications for the future.

Transfer of learning did occur in the present experiment, and was significantly correlated both with intelligence and with results of the post-programme test of content.

Error rate seems to be related to intelligence, and number of errors was negatively correlated with level of performance after the programme. It would thus seem best to reduce error as far as possible in linear programmes.

Material learned was retained and retention test results and intelligence scores were very significantly correlated.

Reading age was also highly correlated with performance in the age groups tested and should be considered an important variable in programme construction, particularly for younger children. The importance of reading age in programmed instruction for older learners is worth investigating.

Finally, the children in the present study enjoyed programmed instruction, and, above all, even with the less able children, the programme worked and a worthwhile increment of learning was achieved.

BOOK NOTICES

J. C. DANCY, *The Public Schools and the Future* (Faber, 1963, 18s.). A SPATE of controversial publications about an institution might, to a cynic, suggest that the institution is on its last legs. The Master of Marlborough and former Headmaster of Lancing "trembles to lay before the public yet another book on the public schools". There is nothing tremulous about Mr Dancy's handling of the subject. And, on the face of it, the public schools are not in decline, but are robustly confounding the wartime prophets of doom.

Mr Dancy writes of what he knows—boys' boarding schools. He writes clearly and vigorously. He believes in the public schools. Not all his readers will agree with him; for there is no field of education in which one man's meat is more poisonous to another. But it would be a very jaundiced reader who did not acknowledge Mr Dancy's sincerity and shrewd practical wisdom revealed especially in his chapter on "Some Key Words"—including Equality, Privilege, and Social Class. It is worth remembering that the young on the whole are not class-conscious, though their parents usually are; and that the class distinction between public schools and the rest is probably less important than "the most obvious and serious distinction" between grammar schools and secondary modern schools.

In his survey of recent educational history, the author makes the sound point that it was not the public schools themselves, but the local authorities and the Ministry of Education, that killed Scheme B of the Fleming Report (the proposal that the public schools should make 25% of their places available to entrants from maintained schools, whose expenses would be met from public funds). The schools have repeatedly offered places, but very few have been taken up. The main reason why this development has had so little backing from local authorities and the central government is the relatively high cost of boarding education. In spite of the opening created by the Act of 1944 for the promotion of boarding education within the maintained system, the authorities have been notably resistant to a significantly increasing public demand for boarding education. Incidentally, it is interesting to observe that Russia is one of the few countries where boarding education has recently been developed.

As to the future, Mr Dancy assumes that the public schools will neither remain unchanged nor be abolished. He sees two main ways in which these schools could serve a wider public. One is by meeting the increasing demand for boarding education, especially in the IQ range 107-115 (i.e.

between the minimum public school level and minimum grammar school level), for which there is virtually no provision in maintained schools. The other way is by meeting the increasing demand for sixth-form education, wholly boarding or weekly boarding, especially to supplement small grammar schools in rural areas which are not well equipped for a wide range of sixth-form work. He points out that these two functions are the first two of the Labour Party's programme, *Signposts for the Sixties* (1961). Where Mr Dancy's scheme differs from the Labour Party's is that he thinks the changes could be brought about without compulsion. In any case change cannot come quickly. It takes at least five years to alter the composition of a school, since pupils already in it cannot be turned adrift, nor promises to future parents be broken.

As Mr Dancy sees it, the schools would gradually come to say to the Government: "We like our closer association with the maintained system. We would like to keep at least 50% of our places for fee-payers, and to offer at least 25% to be filled from the maintained system. We would negotiate for the remaining margin of 25%." The Government would reply that the answer is readily at hand in the Direct Grant System, with some modifications. The Direct Grant schools have the essential elements of independence; the headmaster appoints his staff, and the governors can spend what they can afford, how they will. And the Direct Grant schools are the most democratic schools we possess, in the sense that they represent the broadest cross-section of society. Incidentally, Mr Dancy does not shrink from the thought of co-educational boarding schools.

On the vexed question whether the public schools give a better education than other schools or merely confer an unfair prestige advantage, Mr Dancy argues that, in an expanding economy, there is bound to be shortage of talent, and therefore a diminishing likelihood that real talent will be neglected or excluded. If, therefore, the public schools still hold their advantage in the competition for jobs, the inference is that their products have real rather than adventitious quality. There is something in that argument; but opinions will differ as to how convincing it is.

One problem is scarcely touched by Mr Dancy. It could be maintained that the real menace to the public school tradition does not come from invasion by proletarians (who can always be assimilated in reasonable proportions) but from a take-over bid by vulgarians. More than half the boys in the public schools are the sons of fathers who were not at such schools. The public schools are receiving an increasing proportion of sons and daughters of parents who have a lot of money and little of anything else, whose houses are furnished opulently but without individuality and contain no books except the telephone directory. Whatever we may think of the complex pattern of values (intellectual, social, and moral) for which the public school stand, it is clear that the successful transmission of this heritage depends on a sufficient continuity from generation to generation. Perhaps the greatest danger to the public schools at their best is that they

may be finally forsaken by the families who have for generations cherished those cultural values, most of which cannot be bought—forsaken by them not merely because they can no longer pay the ever-mounting fees, but because the schools (especially near the large industrial areas) are increasingly becoming a monopoly of the affluent, with whose expensive children it is increasingly difficult for those in modest circumstances to associate without losing their heads and their standards. If Mr Dancy's proposals can help to open the public schools more widely to homes with standards but not much money, they are worth serious consideration.

M. V. C. JEFFREYS

W. D. WALL, F. J. SCHONELL AND WILLARD C. OLSON, *Failure in School*, (An international study presented by Unesco Institute for Education, Hamburg, 1962. 11s.).

THE Unesco Conference on Education and Mental Health in 1952 led to another conference at the Unesco Institute of Education in Hamburg, four years later, on Failure in School, which was attended by delegates from many European countries, the U.S.A., the U.S.S.R. and Australia. The present volume in the series of International Studies in Education is the outcome of the Hamburg meeting, presented by three of its participants: Professor F. J. Schonell, Professor Willard Olson and Dr W. D. Wall, who is also the general editor. The nature, causes and treatment of failure in school learning are considered, an impressive amount of evidence is condensed, and the report contains a valuable bibliography. Olson contributes a characteristic chapter in which he offers a biosocial view of human development and stresses the importance of intra-child variability in mental and physical growth. The two chapters by Schonell on the diagnosis and treatment of children who are failing in school are illustrated by case material from the Remedial Education Centre (now the Department of Child Study), University of Birmingham. Dr Wall writes on the incidence and consequence of failure in many countries, in the setting of home, school and community.

In a world in which educational opportunities are so unevenly distributed and in which the prevailing attitudes towards children are so various, it is a difficult undertaking to prepare an internationally valid and useful report on school failure. The authors and the participants in the conference are to be congratulated on what they achieved, even though the focus of attention shifts from broad low power to intensive high power in different parts of the book. For example, the section dealing with home and community factors cites interesting examples of cultural problems that occur in countries outside Western Europe and North America; whereas the chapters on the examination of failing children and the organisation of provisions apply only to such countries as our own, where social and material conditions favour the implementation of the recommendations.

The writers' concern is for the "large number of children at the primary and secondary stages in the majority of school systems of the world (who) are being made to feel that they are not living up to the expectations of their parents and teachers", and with the fact that "failure in school . . . must be judged . . . to have serious consequences for the mental health of individuals and for the general mental and economic health of communities". Both in regard to causes and consequences they are rightly concerned with people and regard all aspects of the experience of failure as relevant to their topic.

School failure can of course mean many things, failure to reach individual goals, to satisfy the expectation of others, to learn what most others have learned. Among the most important and most common kinds of failure is that of being unable to read and write with reasonable fluency. What the majority of children achieve at a relatively early age is nonetheless the result of highly complex perceptual and conceptual development. Visuo-motor, auditory-motor and linguistic habits of a certain order seem to be the prerequisite of successful response to education for literacy. An adequate level of arithmetical numeracy and simple mathematical and statistical operations, which are a condition of membership of a technological society, seem to depend upon underlying conceptual schema which some children fail to establish. Many kinds of specific learning difficulties, the outcome of organic disabilities and unfavourable environmental encounters, take the form of detectable functional weaknesses in perceptual and conceptual fields. Although the work under review shows some adaptations to the changes of the last seven years it has an anachronistic flavour; one reason for this is the sparsity of reference to specific learning difficulties. There are other reasons!

One may begin with standards of scholastic achievement that are typical of children of a certain age, exposed to a certain educational régime. Some children fail to realise these standards by a significant margin. When such a child is examined and its general intellectual ability is found to be lower than average, one might say: "His poor school attainments are explained; he is doing all that can be expected of him." On the other hand, if general intellectual ability is not low, one argues that he is failing to realise his optimal rate of learning and one seeks causes for this retardation in some other unfavourable conditions which prevent "the margin of intellectual power" from being "released". Identification of "the dull and backward" and the "intelligent but retarded" is dependent upon this first step of estimating intellectual power. This procedure, explicitly recommended and implicit throughout the book, is to give general intellectual ability a superordinate status over all other psychological attributes, subordinate to other cognitive processes and personality variables.

Of course, no clinical psychologist has ever behaved as if he believed whole-heartedly in this dogma; there has always been a curious discrepancy between what he does and what he says he does. This is evident from

the very comprehensive diagnostic procedures which are recommended in the chapter, "The Study of the Failing Child"; these include a physical history, a medical examination, study of the child's home and family environment, school experience and record, tests of intelligence and present academic skills, appraisal of attitudes, interests and emotional make-up. But what should one do with all this information? What distinguishes the causal, the associative, the reactive and the irrelevant? These largely rhetorical questions reflect the lack of some better theoretical and truly psychological framework to supersede that of general intellectual reasoning endowment which is no longer tenable. The concepts of development, proposed by Olson, are based upon evidence that "no two children are ever alike in . . . patterns of growth", evidence that psychologists too often ignore. But the theoretical model which he offers is not the answer. The assertion that development, including achievement in school, is the outcome of continuous interaction between maturational processes and nurturant experience, is of no scientific utility until one can say with some precision how this interaction takes place.

The two points, adversely critical, made above, of the underlying assumptions in this work, lead on to a further criticism of far reaching practical import. Psychometric procedures may be used to predict response to what is customary, to what is currently taught and how it is taught. Although the traditional use of such procedures results in some modifications of the prediction criteria, fundamentally the outlook is static, not adaptive; it results in the casualties, those who do not satisfy the prediction, being regarded as cases for "remedial" action. However much this book may be rightly valued as an authoritative work on the subject of "Failure in School", it is restricted by a backward-looking conservative view; not "remedial" action, but simply educational action, of much greater versatility and ingenuity is what we should look forward to.

C. J. PHILLIPS

LESTER CROW AND ALICE CROW (eds.), *Mental Hygiene for Teachers. A Book of Readings* (The Macmillan Company, New York, 1963).

THIS book is intended for teachers in training and teachers in service. It has 580 pages divided into 15 sections with a total of 88 contributions from about 70 authors. Inevitably, with so many authors writing originally for a variety of publications, there is difficulty in achieving even a semblance of cohesion. Some contributions are based on research and experiment: others are evaluations or expressions of opinion.

"What Research Says About Understanding Intergroup Relations" by Jean D. Grambs, is most disappointing. The reader is presented with a number of brief statements compressed into 3½ pages. There is need here for an expansion of some of the excellent points made and the inclusion of even a short bibliography. In 2½ pages we are given "A Positive Approach

to Elementary School Discipline". We are told that "well established routine minimises behaviour problems" and that "creative participation in classroom activities strengthens a feeling of worth and reflects itself in self-control". Few would disagree with these or with 18 other "concepts and suggestions" in this contribution by Frances Holliday. But to leave discussion of vital aspects of classroom relationships at little more than a list of brief suggestions is of little help to the teacher. "Eight Basic Needs of All Children", by Dr Louis Raths, in less than a page is probably the ultimate in brevity in a book of readings.

"Changes in Teachers' Attitudes Toward Children's Behaviour Over the Last Thirty Years", by E. C. Hunter, is one of a number of interesting contributions making use of research material. The study confirmed that better trained teachers showed more understanding of children's problems: more attention to mental hygiene at undergraduate and graduate level was proposed.

"The Characteristics of a Helping Relationship", by Carl R. Rogers is a well documented contribution which concludes with the view that the future of this planet depends upon those "who are trying to understand and deal with the interactions between human beings". With great sincerity and without moralising the author presents a number of searching questions dealing with his own relationship to others. Even if the implications of some of these questions appear to be idealistic they seem to have great relevance for those who work with others.

"Love Therapy", is a moving contribution by Laura C. Johnson, a sixth-grade teacher from Georgia. Daily facing the difficulties and frustrations of serious behaviour problems with children who fought, swore and stole, she wrought a transformation by studying her children, grouping according to ability or friendship and, by much effort, attempting to meet individual needs. Eschewing "the psychologist's point of view" she found that "love along with faith, understanding and perseverance, can accomplish wonders". This encouraging success reminds one of that experienced in different circumstances by Homer Lane and David Wills, seekers of "helping relationships" based on love and respect for their pupils.

This heterogeneous collection is not up to the level of many other American compilations. The great variety does not make it easy for the teacher in training to grasp the essentials of mental hygiene. Nevertheless if read selectively there is much that is stimulating and worthwhile for the practising teacher and others with experience of children and young people.

M. STANTON

SIR RICHARD ACLAND, *We Teach Them Wrong* (Gollancz, London, 1963, 21s.).

SINCE 1944 religious education has been generally compulsory in this country. One might expect, by now, to see some result. Yet there is no obvious increase in national godliness; Dr Kenneth Hyde has shown that

children become steadily less attached to religious ideas during their time at secondary school; and the 1963 report of the British Council of Churches openly admits that much religious education is ineffective. Many teachers of the subject seem piously unaware of this.

To shock them into a recognition of the situation, and to make them examine their methods, Sir Richard Acland has written *We Teach Them Wrong*. He analyses the intellectual pressures that make the expression of Christianity in its traditional forms no longer acceptable, even to those who would like to be Christian. The change from a feudal to a democratic society has made men regard their own experience, rather than an external authority, as the source of truth. The Christian teacher cannot, as formerly, command assent by saying, "This is true because the Bible, or the Church, says so." The recognition of the universal validity of the law of cause and effect renders miracle useless as an apologetic. The exaltation of reason, at the expense of emotion and aesthetic experience, has rendered meaningless such terms as "sin", "soul", "goodness" and "badness".

The book advocates three major reforms in religious teaching. Firstly that it shall cease to be mainly Bible study, and become a free discussion of philosophical, political, and social problems. Secondly, that it shall not include unacceptable ideas such as miracle, the Virgin Birth, the existence of a Devil, and a physical Resurrection. Conservative Christians may question whether the fact that these beliefs are at present unacceptable necessarily makes them untrue, and whether Christianity without them remains Christianity. Is this too much tempering the theological wind to the technological shorn lamb? Thirdly, Sir Richard advocates attempting in the classroom a shallow sort of depth psychology, in which the children are bidden look into the "Deep Centre" and find "Me-at-my-best". With such an exuberant and knowledgeable teacher as Sir Richard, this may be an exciting experience, but in less lively hands it could be just as dull and profitless as a detailed study of the disposition of the Hebrew tribes in Canaan.

Sir Richard admits that the book is propaganda, and the politician is still in his pen. Yet indignation does not obscure a shrewd appraisal of the present teen-ager's approach to (or retreat from) religion. The book ought to be widely read, if only for its insistence that the chief duty of the religious teacher at the present stage of human history is to help adolescents to take a serious and responsible (dare one say "religious"?) attitude to life, and not to clutter their minds with literally misinterpreted symbols.

EDWIN COX

ROBIN PEDLEY, *The Comprehensive School* (Pelican 1963, 3s. 6d.).

"A BOOK on comprehensive schools should not use the title at all if it does not, however unworthily, at least attempt to view the subject in a truly comprehensive way."

Dr Pedley, attempting to follow his own precept, has ranged widely,

placing the comprehensive school in its social and historical context (in the first two chapters) and dealing with different forms of comprehensive education at home and abroad, as well as outlining his "programme for progress" in the last chapter.

Such breadth is not achieved without cost, however. While much of the background material is interesting and helpful, the fact remains that what one would expect to form the core of the book (i.e. "Inside the Schools" Chapter 3) extends only to about a quarter of the total length. The fruits of extensive research are thus compressed into one rather unsatisfactory chapter.

It is obvious that in a book of this compass there must be simplification, but one cannot help feeling that the first two chapters, which are introductory in function, could have been reduced in order to allow for a fuller treatment of the central topic. Moreover there are, in the fourth and fifth chapters, themes such as the poverty of urban and suburban cultural life which one might have wished to see developed at the expense of the rather sketchy study of the class system in the first chapter. The plan of the whole book seems in fact somewhat disarticulated, with major and minor themes insufficiently differentiated, and the argument in places is repetitive. (One wishes, for example, that the problem of satisfactory sixth-form provision, to which there are repeated references, had been made the topic of a separate chapter.)

Despite this, certain major themes come over strongly: a compelling indictment of intelligence testing, of sorting children into three types, of the "pessimistic belief in a limited pool of ability"—this last theme being one of many in which Dr Pedley's arguments are reinforced by those of the Newsom report. One is convinced, too, by his fervent advocacy of closer links between school and community, and by the inspiration he has derived from the work of Henry Morris in Cambridgeshire. His strictures on the evils of the hierarchic organisation in big schools that has resulted from the Burnham pay structure also merit attention, as does his plea for more "direct contact by teachers with their pupils' homes." Apart from such major themes, the book touches on a great variety of minor, practical points in a way that witnesses to the author's real insight and scrupulously detailed research.

And yet this is a disappointing book. The style is sometimes cliché-ridden, sometimes patronising, ("the good party men of Durham" . . . "the good ladies on the other side of the hatch, bless them . . .") and it is almost consistently monotonous. Monotony of sentence construction would not, however, be so serious a defect—for at least the meaning is plain—were it not found in frequent conjunction with a type of emotive language more usually associated with the cheapest and least impartial newspapers. One reads, for example, that "the teachers at Kirkby have bravely picked up the gauntlet tossed down by an affluent society".

A source of disappointment more important than the sporadic use of

stereotyped, emotive catch-phrases is the political bias that clearly underlies them. Dr Pedley's case is strong enough to stand up without the aid of rather cheap political digs—"The Ministry, fearful as ever of total commitment"—this kind of bias can only serve to irritate the impartial and infuriate the prejudiced.

This seems unfortunate. "Comprehensive" has for too long been an emotive word in itself—a loaded term—provocative of judgments as emotionally charged as they are irrational and educationally irrelevant. Dr Pedley sees that progress has been made and professes moderate optimism but his impatience with the processes of "evolution" in the sphere of education, together with his deep sense of the injustices of the tripartite system, has led him to state his case in a way that invites emotional reaction to matters which it is high time for us to view objectively

PATRICK CREBER

P. HALMOS (ed.), *Sociological Studies in British University Education*. Sociological Review Monograph No. 7 (University of Keele, 1963, 32s.).

PUBLISHED in the same month as the Robbins Report and written under its shadow, this collection of fourteen papers is an uneven product. There are papers with a tone of urgency, those with a timeless quality, some without either and those we have read before.

Ashby leads off provocatively enough with the assertion that most of the decisions taken in the "corridors of academic power" are based on insufficient evidence. Unfortunately, this challenge is barely appreciated by some of the contributors: Berdahl's narrative account of recent Treasury-U.G.C. relations and Blondel's comparative study of State-University relations, lack the lustre and excitement that Ashby had led us to expect; hot and dry off the tabulator, Newfield's paper on factors related to students' academic performance lacks evaluative comment; Niblett fails to generate new insights in an essay on Oxbridge and Redbrick; and Simey's "Sociology of University Education" is little more than the act of a weary chairman winding up the long debate.

The core of many of the other contributions is the student, his background, his selection and subsequent academic performance. Vernon lays the foundations with an admirably clear denunciation of the "pool of ability" concept. Furneaux takes up this stand and performs vigorous computational gymnastics to estimate an upper limit for the proportion of an age cohort which might be admitted to higher education. He finds it "reasonable to assert that an overall improvement of standards beyond that now demonstrated by (Occupational Group 1) children is unlikely to be possible in the foreseeable future", yet he is prepared to base one estimate on an assumption requiring that children of low socio-economic background have their environments levelled up to match that of the best now available. There seems to be a fine theoretical point here concerning which

of two extremely unlikely events is the more unlikely, and which is more "possible in the foreseeable future".

Himmelweit's report of two student selection inquiries would be unexceptional but for her brief discussion of the way in which a multiple prediction equation is as much a reflection of the course content, its teaching and examination as it is of the possibility of better selection. This important but rarely appreciated notion might well have been developed at greater length: Kelsall's broader view of the British evidence on student selection could well have been allowed to speak for her on the other matters.

Dale discusses the influence of social class on student selection in a most perceptive way, concluding, amongst other things, that social class variables may interact with other factors in more complex functional ways than researches have hitherto allowed. It is in Malleson's paper that we find the real live student and his problems in university life. Apart from his discussion of the more severe individual problems, we get some hint of the riches to be discovered from widening our inquiries beyond mere selection problems to those of guiding the student. Only Ford's paper, of all the contributions, attempts to delineate the rôle of universities. In his view, it is the universities' job to accept "intellectual responsibility" for "intellectual vitality" in higher education, for effort at the "intellectual frontiers" and for stimulating and directing "intellectual change": indeed, he uses the word "intellectual" over thirty times in fourteen pages. The practical consequence of accepting intellectual responsibility is, he argues, the creation of something after the pattern of an institute of education relationship with other forms of higher education. In "Some Myths of University Expansion", Little argues that expansion is no new thing in this century; that this expansion has not taken place at an unprecedented rate, and has not radically altered staff-student ratios, sex and social class ratios, subjects being read or universities attended.

Taking an overview, there is a critical lack of balance in the monograph. If this alleged imbalance is due to a genuine lack of research in certain areas then the editor has done a good job by exposing this, but had a little direct conflict been allowed between some of the contributors, perhaps in a genuine symposium, the gaps might have been closed. Surprisingly for a sociological review, it is the sociological interests which come off worst. There is the large gap between the papers on University-State relations and those on student selection. Where, for example, are the contributions in depth on university administration, on college and faculty organisation and on human relationships within these frameworks? Simey recognises the vacuum but offers no real comfort.

In summary then, this monograph is an important documentation of researches in the pre-Robbins era. It exposes quite cruelly the lack of knowledge the university organism has about itself and deserves to be read by social scientists on this account alone.

PHILIP LEVY

ANNE TRENEER, *The Mercurial Chemist* (Methuen, 1963, 36s.).

HUMPHRY DAVY was a man of science who achieved great eminence through his experimental skill. His contributions to chemistry aroused the admiration and enthusiasm of the scientific world of his day. The safety lamp he invented, almost as it were to order, added to his lustre and international fame. It was Davy who saved the Royal Institution from foundering after Rumford had abandoned it. He did so by the brilliance of his scientific work, the appeal of his lectures and his policy of promoting fundamental research instead of applied science. All these facts are widely known but what is less commonly remembered is that Davy was a poet, that he moved easily in the highest society and that he rose to the pinnacle of scientific eminence, the presidency of the Royal Society, from humble beginnings.

Miss Treneer's sympathetic biography brings clearly before her readers Davy's early life, his relations with Coleridge and Scott and his rise to fame via the Pneumatic Institution at Clifton and the Royal Institution in London. She is successful in writing of personal relations; this is clear, for example, when Davy's marriage comes under review. She gives considerable space to his travels and his picturesque—even daring—experiments in the inhalation of nitrous oxide. Her descriptions of the men with whom he worked—Rumford is an obvious example—are accurate and add much interest to the composition of her portrait. Where the author is less successful is in her treatment of Davy's scientific work.

Davy's most enduring and brilliant contribution to science came from his use of the voltaic pile. Volta had communicated the results of his experiments to Banks by letter in 1800. Within six weeks Carlisle and Nicholson had studied the decomposition of water by passing a continuous electric current through it. There followed many experiments, for a powerful method of chemical investigation had suddenly been made available. But the results obtained were confused and confusing. It was Davy's genius that in 1807 and afterwards brought much clarity and undertanding. In the process he isolated for the first time the alkali metals sodium and potassium. He was assured of an honoured place in the history of science and suddenly found himself one of the most sought after men in Europe.

Those deeply interested in the history of science will no doubt wish to go to original sources to see the full significance of Davy's work but this book will bring illumination and enjoyment to a great number of people who know something of his discoveries, to whom he is perhaps a name in a text-book. It creates a warm and lively portrait of a man of great gifts and sensitive disposition and it doesn't entirely omit the warts.

W. J. SPARROW

C. KERÉNYI, *The Religion of the Greeks and Romans* (Thames and Hudson, 1962, 42s.).

MESSRS Thames and Hudson have put all book lovers in their debt by a series of volumes in which magnificent illustrations are matched with a

worthy text. The relation between plates and text in this volume is unusual and stimulating. It is not, as title and appearance might at first suggest, an illustrated handbook of Greek and Roman religion: it is a critical essay in which facts drawn from a wide range are adduced for their relevance to the theme of the author. Its purpose is indicated by the title of the first version, written for an Italian series: *La Religione Antica nelle sue Linee Fondamentali*. The author starts with the assumption that religion must be studied through its *works*, and seeks the permanent reality underlying all manifestations of Greek and Roman religion, what he calls their *style*. This he finds in the festival, the activity, repeated at rhythmically recurring periods, in which the community enters into conscious relationship with the higher realities by which workaday life is surrounded, what he calls "life in the myth". Since we can no longer observe this activity as a living reality, we can only study it in the material remains it has left behind it in art and literature. Thus the plates are no mere embellishment of the text but an essential part of the plan of the book. They "do not, except in some special cases, refer directly to passages in the text, but are intended to support it with a background of actuality". This claim is abundantly justified, and because of the beauty of the objects represented it is a perpetual delight to the eye. But in the special cases where there is a direct relevance to the text the recognition of this appositeness gives an unusual kind of intellectual pleasure, akin to that which we derive from wit: e.g. the juxtaposition on opposite pages (plates 42n and 43) of the lovely, austere, clothed figure of Aphrodite from a red figure vase painting with the marble statue of the nude goddess, or the page of terra-cotta heads, demure or mischievous, which sets one wondering what "life in the myth" meant to the little girls or young maidens from Athens who dedicated them at Brauron.

Professor Kerényi's view of religion has obvious affinities with that of the sociologist Durkheim, but he will have nothing to do with any theory that would make the god a mere projection of the ritual or the creation of his worshippers: indeed he says roundly: "It was when the study of Greek religion begins to talk of the 'making of a god' that it removed itself furthest from any primitive or ancient religion" (p. 65).

> The festival as a reality of the world of men—for so we may call it, fusing its subjective and objective ingredients—means that humanity is capable, in rhythmically recurring periods of time, of becoming contemplative and in this condition of directly meeting the higher realities on which its whole existence rests. This meeting can also be interpreted as meaning that the world becomes transparent to man's intelligence and reveals to him one of its meaningful aspects, or alternatively that in his intelligence the world arranges itself under one such aspect (p. 66).

The conception of the festival worked out for the elucidation of Greek and Roman religion has a wide validity. Professor Kerényi turns the tables on scholars who tried to explain the concepts of Greek and Roman religion

by using terms derived from the anthropologists' study of savage religion, for he shows that some of these savage rituals have features which are better understood by appreciating "the festive character of the whole proceeding". But it also has its application to the higher, living religions, such as Buddhism and Christianity.

If we wanted to classify religions according to the extent of their addiction to the festival—which would be a perfectly feasible principle—the classical religion would have to be reckoned among those which are most markedly festival religions. Roman Catholicism belongs more or less to this group, while Protestantism must be regarded as tending to the opposite pole (p. 52).

Only specialists—philologists, anthropologists, students of classical art and literature—will be able to discuss issues raised in these fields: I hope I have said enough to show that anyone interested in the history, psychology or philosophy of religion should find much to interest him and stimulate further thought. What will immediately appeal to each will no doubt depend on existing interests, but the chief value of the book will be to open out new vistas from these.

MARGARET B. HOBLING

JOHN BLACKIE, *Good Enough for the Children?* (Faber, 1963, 18s.).

THE book is a collection of lectures given at various ministry courses by H.M. Chief Inspector of Primary Schools. In one place he says, "The aim of a Ministry Course is initially disruptive": in another, referring to a discussion of freedom: "it would ill-become a civil servant to engender, or to try to deal with, such heat as the exercise would undoubtedly generate". One sees Mr Blackie's problem. The result is an elegant and civilised book which asks some good questions, for instance on English teaching, but in which the answers are curiously muffled. In the chapter, "English in Further Education", the author suggests "a pretty radical departure from tradition"—which consists in rejecting exercises and using popular material the students are familiar with. This is excellent if not exactly revolutionary. We get no further however—doubtless it was the business of the Ministry course to do that—and we are left, here as elsewhere, with this skilled and frustrating inauguralism.

ANDREW M. WILKINSON

K. AUSTWICK, *Simultaneous Equations*. A Clearway programmed book (Methuen, 1963, 5s.).

THE purpose of this programmed text is to teach the working of simultaneous equations in very easy stages to average pupils in the course of four or five lessons. This is achieved in 136 frames and tests though the number of responses required to each frame ranges from one to fifteen. So gradual a development might be tedious to the more gifted pupil but he could be advised to skip frames. For the average pupil it is a very useful introduction;

it covers more ground in the time than is possible by current methods and yet ensures that every child makes about one thousand responses at his own pace. It can be recommended as an introduction, for revision, or to give to a pupil who for any reason has missed ordinary schooling.

R. BEARD

ASA BRIGGS, *Victorian Cities* (Odhams, 1963, 35s.).

THIS book is designed as a companion volume to the author's *Victorian People*. In that book he selected a number of people whose lives illustrated the spirit of the middle years of the nineteenth century. Here he has chosen a number of cities to illustrate aspects of urban development in the period vividly delimited by him as being between the coming of the railway and the birth of the motor car. At first sight the cities seem an unusual assortment. The north is represented by Manchester, Leeds and Middlesbrough; Birmingham is chosen for the Midlands and London is included as a "world city". Melbourne is included as an overseas example. The author admits the selection is somewhat arbitrary but he argues that it is essential to have had personal knowledge of these towns if one is to avoid the over-generalised accounts that are often offered as city studies. His career has taken him to all these places; in fact he "served his apprenticeship" in the Birmingham Reference Library.

At times the accounts are a little overwhelming because of the mass of detail that is necessarily involved, with the result that the city studies, although meant in part to illuminate the *methods* of studying cities, tend to remain rather separate from each other. The reader has to rely on the two stimulating opening chapters to gain a more general view. The epilogue also attempts a broader view, with passing references to many towns.

The author rightly criticises the approaches often used in city studies—the antiquarian, the booster and the narrowly academic. He argues that a study of Victorian cities must necessarily be concerned with individual cases and hence he is somewhat critical of the approach of Lewis Mumford. This is a real attempt to improve the standards of writing on a topic that is likely to be of ever increasing importance as the figures for world population climb rapidly and more and more of us live in towns. One person in eight in the world now lives in towns of over one hundred thousand population, and in this country eight out of ten are town dwellers. The problems illustrated in these studies of the Victorian era are in many respects problems of the present day.

A. E. TUBBS

W. E. FLOOD, *The Origins of Chemical Names* (Oldbourne, 1963, 30s.).

The Origins of Chemical Names is a worthy successor to Dr Flood's book, *Scientific Words, their Structure and Meaning*. Although more limited in its scope, this book should appeal to as wide a range of readers as the previous one. The introductory section includes a summary of the development of

chemistry from its earliest beginnings, particular attention being given to the growth of scientific vocabulary. The account of the efforts made to develop systematic patterns for naming chemical substances is most informative and interesting.

The first part of the main section of the book, which is in the form of a glossary, is devoted to the derivation of the names of all the elements known up to the present time. This section, containing a wealth of information not normally found in text-books, is presented in a concise and lucid manner. The final, and the longest section of the book, is concerned with the origin and names of a comprehensive list of chemical substances. Although the emphasis throughout is on the derivation of names, many interesting facts about the substances themselves are given.

Dr Flood's undoubted enthusiasm for his subject is successfully conveyed to the reader, and as a result he has produced a book in which factual information is presented in a most scholarly and lively manner. *The Origins of Chemical Names* will provide pleasurable and profitable reading not only to the scientist, but to everyone who is interested in the study of words.

J. O. HUGHES

M. BREARLEY (ed.), *Studies in education : first years in school.* University of London Institute of Education (Evans Bros., 1963, 12s. 6d.).

So interesting a series of lectures as are reported here must have resulted in a demand that a permanent record should be provided. The development of primary school children is discussed from many points of view: physical development by J. M. Tanner, thinking by Piaget, scientific interests by Nathan Isaacs, development of language by Norah Gibbs, ideas about number by Eileen Churchill, personal and social development by D. E. M. Gardner, and finally, spiritual development (though this is restricted to understanding of some biblical concepts) by R. J. Goldman. A foreword and some implications for teaching are provided by Miss Brearley, Principal of Froebel Educational Institute. The reader may regret the absence of discussion of spiritual development in a wider sense—to include growth of aesthetic interests—as all essential fields of development would then have been covered; but the list of speakers alone shows that this was an outstanding series of lectures and they prove almost equally stimulating in book form.

R. BEARD

Slide Sets, *Maps of Europe* and *Maps of Africa* (Educational Productions Ltd., 1963, 25s. each).

IN each case these slide sets comprise ten slides mounted in card, along with a booklet. When projected each provides the teacher with the equivalent of a wall map. The selection of titles seems out of balance—six of the

Africa slides and seven of the Europe slides refer to climate. There is no slide on, say, population distribution or communications.

Filmstrip, *Chile* (Educational Productions Ltd., 1963, 30s.).

THIS is an excellent collection of 25 pictures in colour covering a six-fold division of Chile. The author has avoided the usual over-used sources and produced a strip that provides a mine of visual information for the children.

A. E. TUBBS

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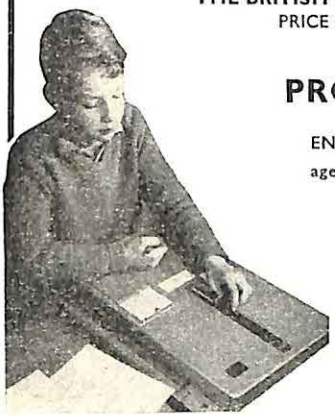

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ACADEMIC PERFORMANCE AT UNIVERSITY

Test Performance, Motivation and Course of Training

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Introduction

Students of two engineering departments at the University of Birmingham completed a number of aptitude tests and questionnaires on their social participation, attitudes, and study habits.* In Section I the relationship between the test results and examination performance at the end of the first year are discussed. The conventional reason for looking at this kind of data—to improve the selection of students—is questioned, and an alternative approach is suggested in which selection and training are regarded as interacting or functionally related processes. In Section II, the information gathered by questionnaires is used to comment upon the tentative conclusions derived from the test data. In general terms our results suggest that test data can not only give useful information about ways in which selection may be improved, but can also suggest ways in which the training may be evaluated.

I. The Prediction of Academic Performance

There have been innumerable prediction studies reported in the psychological and educational journals. It is not our intention to review these, but rather to use the present data to illustrate some quite general points arising from such studies.

Four tests of the Morrisby Differential Test Battery (1) were administered to the students at the beginning of their second year, and examination results available at the end of their first year at university were collected. Both groups had at the time of testing passed through several stages of selection. They had been selected for interview, on the basis of paper qualifications (e.g. A level results);

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they had passed an interview; and the group selected for special study were those who had passed directly to their second year course without loss of "Honours" school recognition. It should be recognised that all these reductions of the original applicant group, in so far as the procedures are valid, will tend to make the remaining group more and more homogeneous with respect to a number of dimensions.

The main gist of the results is shown in Table I.

TABLE I

PRODUCT-MOMENT CORRELATIONS BETWEEN FOUR APTITUDE TESTS AND FIRST YEAR EXAMINATION RESULTS IN TWO ENGINEERING DEPARTMENTS

	Department of Mechanical Engineering (M.E.) ($N=34$)				*Department of Electrical Engineering (E.E.)* ($N=36$)			
Examinations: Tests:	Maths.	Dynamics	Eng. Drwg.	Strength of Materials	Maths.	Physics	Elec. Eng.	Combined
General Reasoning*	·05	·44	·06	·16	·14	−·08	−·05	·22
Verbal Ability	·14	·46	·46	·30	−·27	−·23	−·01	·19
Numerical Ability	·29	·43	−·08	·48	−·04	−·20	·07	−·11
Perceptual Ability	·09	·15	·57	·22	·11	−·38	−·08	−·03

* Morrisby's "Compound Series Test".

It should be stressed straight away that although the groups are only of modest size the question of the statistical significance (reliability) of these correlation coefficients does not arise: we do not regard the groups as samples of any larger population. The correlation coefficients given describe the relationships for these particular groups of engineering students.†

From the conventional or classical point of view the data for Department M.E. suggests that selection might have been improved by using some suitable combination of the four tests. The correlations may be judged useful when account is taken of the fact that the groups have been homogenised by prior selection which would tend to lower the present correlation to a degree determined by the validity of the original selection processes. To come to such a conclusion, however, sampling factors would have to be considered and such practical considerations as the time and cost of testing would have to be taken into account and set against the expected benefit from improved average performance. The markedly lower

† The only sense in which sampling notions might enter our discussion is that in which the correlation varies as a function of test and examination repeat reliability. This sampling variation is obviously much less than that due to differences between independent samples.

correlations for Department E.E. suggest on the other hand that rather less benefit would be achieved by additional selection and this would only result from selecting those *less able* candidates who pass earlier stages of the selection process! This then is the consequence of what might be termed the "classical" view of our results.

There are a number of alternative interpretations to be considered; some are statistical in nature and some functional. First, the tests may be unreliable; but the errors of measurement for these types of test are usually quite small compared with the errors of prediction. In addition, if this were a serious possibility the correlations for Department M.E. would also be low in value. Secondly, the examinations may be unreliable. Even if Department E.E.'s examiners marked less reliably than Department M.E.'s, this is no reason why the pattern of correlations should be markedly negative. Thirdly, it is possible that tests valid for Department E.E. are not valid for Department M.E. Both M.E. and E.E. are engineering departments and to some extent we would expect tests valid for one to have some validity in the other. In any case we have again failed to account for the persistent negative correlations. Fourthly, the range of ability in E.E. may be smaller than in M.E., thus causing reduced correlations. Again the negative rather than simply low correlations deny this, and in addition, as shown in Table II, there is no marked difference between the departments in this respect.

TABLE II

MEANS AND STANDARD DEVIATIONS OF THE APTITUDE TESTS*

	Department M.E.		*Department E.E.*	
	Mean	*S.D.*	*Mean*	*S.D.*
General Reasoning	8·8	4·23	11·1	4·43
Verbal Ability	9·7	4·25	10·4	4·17
Numerical Ability	10·9	4·82	11·1	3·87
Perceptual Ability	10·8	3·93	11·9	4·11

* The original Morrisby scores are re-scaled to spread scores over the values 1 to 20.

It is obvious that some more comprehensive interpretation is required. To arrive at such an interpretation it is suggested that a more functional view of the correlations needs to be taken. If a correlation exists between a test and an examination, it may be thought of as being due to common *demand* made upon the testee by the two situations. In this sense it is not surprising to find that in an engineering department like M.E. some examinations make demands on Numerical and Perceptual Abilities.

On the other hand, it is perhaps surprising that an engineering department makes such demands on Verbal Ability as shown in Table I. It is, of course, impossible to make strong assertions along these lines without knowing a great deal more about the content of the course and the structure of the examinations. The point at issue is, however, that given this sort of data it is not merely possible to improve selection but also to describe some of the demands made by the training. It should be clear that the higher the correlations the greater the improvement in selection there can be, when we are selecting for a *fixed* training; but at the same time, the larger the correlations the more we know about the demands made by the training. The better the prospects for good selection, the more clues there are for modifying the training for which selection is taking place.

The notion of "demand" as used here does of course reflect the concept of motivation: that performance is a function of ability and motivation is a reasonable enough model. On this basis, we might tentatively conclude that Department M.E. is motivating its students to the extent that demands are made on differences in ability which relate at least in part to academic performance. The data for this department give a basis for discussion about modifying either or both the selection procedures and some aspects of the training. Department E.E., on the other hand, does not appear to be making sufficient demands upon the more able students.

We should stress, however, that we are not making any comment on levels of academic performance—our data is inadequate for this purpose—but only upon the relative performance of high and low test scorers within each department. It is possible to imagine a course of training where average performance is good compared with similar training courses and for the correlations to be zero or negative.

II. Motivation and Performance

Working on this tentative hypothesis—that in Department E.E. there are factors which may be inhibiting the performance of the abler students—we set out to compare:

(1) the course content and methods of teaching in the two departments

(2) student study habits and students' comments about their courses

(3) the detailed characteristics of the over- and under-achievers in Department E.E.

(1) *Course content and methods of teaching*

Department M.E. has a reputation of imposing a workload which comes near to the limit of student endurance. In fact, in both departments the total classroom hours for a teaching year of 24 weeks were around 600. But M.E. includes many more professional courses, taught within the department, whereas in E.E. the greater part of the work is devoted to basic physics and mathematics, taught outside the department. Thus while M.E. provides professional engineering courses from the start, E.E. insists on a more rigorous grounding in subjects which have already been studied at school.

The table summarises the main differences between the departments.

Department M.E.	*Department E.E.*
42% of classroom hours lectures—the remainder tutorial and laboratory	57% lectures
70% of hours given to main subject	20% of time given to main subject
30% of courses taken outside department	80% of courses taken outside department including about 50% devoted to basic mathematics and physics
Weekly "quizzes" (an hour's test on problems)	

Both departments have a system of tutorials or "work supervisions" in which groups of three students meet and work problems with a staff member or with a research student. In addition department M.E. runs weekly tests or quizzes, and as the results are made public it is claimed that both staff and students are encouraged to maintain a high standard, since low marks reflect on both staff and students. M.E. has made an effort to be self-contained. Applied mathematics, for example, is taught in context in the engineering course, not as a separate subject as it is in E.E. The major courses are analytical, but the course as a whole may be at a more descriptive level than the E.E. course.

Some of these points of comparison might be taken as supporting the initial hypothesis: in E.E. there is more repetition of school work, the students are in less frequent contact with the departmental teaching staff, and may be under rather less pressure to work.

(2) *Students' study habits and comments*

Questionnaires on study habits and social participation were answered by students in both departments. These questionnaires were, however, administered when the students were in their second

year at the university, by which time the workload in Department E.E. especially had become heavier and had changed in character. Moreover these questionnaires consist of 75 items, which cannot here be given in full and it is notorious that by selective treatment of data supporting evidence could be produced to sustain almost any hypothesis. All those items which were answered differently by the two groups are therefore tabulated here. These were:

	Department M.E. $N=46$	*Department E.E.* $N=50$
	Numbers answering "Yes"	
On transition from school to University:		
Changes in methods of work are bewildering at first	14	24
More guidance is needed at first in the use of time	14	31
There is insufficient guidance in methods of study	8	29
Students who say that their work is sometimes or usually irregular	23	34
Difficulty in getting through the work set	28	6
Methods adopted to deal with difficulties:		
Looking up further information	14	21
Asking questions in class	10	2
Those spending more than 4 hours per week in the library	10	18
Changes most often suggested in Department M.E.:		
More time for private study	28	15
Fewer lectures	22	16
Changes most often suggested in Department E.E.:		
More worked examples	21	35
More individual help	14	23
Other suggested changes (free comment):		
The course should be extended to 4 years	13	9
Reduce the number of subjects	13	7
Change the approach in lectures	4	10
There should be more contact with staff	2	6

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	Department M.E. $N=46$	*Department E.E.* $N=50$
	Numbers answering "Yes"	
Other free comments:		
Too much work	16	13
Too much like school	0	4
Too slow in getting to advanced work		
More stimulus to work needed	0	5

From the pattern of answers it seems reasonable to conclude that in E.E. as compared with M.E. there is (1) less initial guidance, (2) less pressure to work and less set work, (3) less personal contact between staff and students, (4) more self-education expected, and (5) a slower pace of work. Possibly E.E. in its first-year practice is nearer to the traditional concept of university education, while M.E. offers a more definite training and insists on more rigid work requirements.

It seems likely that to do well in E.E. a student may have to be more autonomously motivated than in M.E. but, at the same time, the more impersonal teaching methods, the greater reliance on outside lectures, and the small amount of work directly centred on the students' professional interests may in fact decrease the likelihood of autonomous work motivation.

(3) *Characteristics of over- and under-achievers*

The overall discrepancies between test scores and examination marks may be usefully, if crudely, expressed by dividing each group into thirds on their summed test scores and on their summed examination marks:

TABLE III

		Department M.E. *Summed Exam. Marks*				*Department E.E.* *Summed Exam. Marks*		
		upper	middle	lower		upper	middle	lower
Summed Test Scores	upper	8	2	2	upper	3	4	6
	middle	3	4	6	middle	3	4	4
	lower	2	6	3	lower	7	3	3

The discrepancies in Department M.E. are neither as numerous nor as severe as those in Department E.E. In M.E. the upper ability group does markedly better than the middle and lower group. In E.E., on the other hand, the upper group does worse and the lower group better than might be expected.

On our hypothesis the abler students in E.E. are not being "extended" by this course, and some presumably are neglecting their work. But the high performance of the less able also needs to be explained. The only feasible explanation, unless we assume that the course is making demands on some hypothetical abilities which are negatively related to those in the test battery, is that the less able students are more highly motivated by the course than the more able.

In discussing motivation it is useful to distinguish between (*a*) intrinsic motivation—that is relatively enduring motives, and (*b*) more immediate motives arising from the present environment. The over- and under-achievers may then differ in their intrinsic motivation: it is possible, although on the face of it unlikely, that E.E. may be admitting able but lazy students on the one hand and less able but more earnest students on the other. In other words there may be a systematic negative relationship between intrinsic motivation and ability. Although this possibility appeared unlikely it had to be explored.

The second possibility is that the able and less able students differ in their more immediate motives. This seemed the more likely explanation. We know from general theory (2) that for each individual there is an intermediate zone of task difficulty in which his effort will be maximal. Tasks that are too easy present no challenge. If the general level of difficulty of a course is such as to present a challenge only to the less able, ability and effort may be inversely related. In the context of a university course this will mean that the energies of the abler students, being less closely geared to work, may tend to be dissipated in various extracurricular activities.

Examining the first possibility, all the evidence has been searched for single factors, related to intrinsic motivation, which might discriminate between the over- and under-achievers. One promising lead was the religion of the students. In E.E. there was an association between non-conformity (Methodists, Presbyterians, Baptists) and over-achievement:

	Over-achievers	*Under-achievers*
Non-conformists	7	2
Others (usually C.E.)	6	12

It is a common observation that those students who take religion seriously exercise a more rigorous discipline than others in their personal lives. Non-conformists are particularly likely to have been

influenced by the value system described as the Protestant Ethic, a work morality emphasising the Devil's stake in idleness and self-indulgence. These non-conformist students come mostly from the lower-middle classes in whose upwardly mobile members achievement motivation is thought to be especially strong.

Moreover it does appear that, if non-conformity in religion is taken as an index of motivation, ability and motivation are negatively related in E.E.: by and large the non-conformist group are low test scorers. This peculiarity of the sample is not found in M.E., where there were more students from the professional classes and less non-conformists. Thus if it were true that E.E. admitted a group of dedicated students of sub-average ability the negative correlations between test score and performance might be explained.

The analysis of individual cases, however, revealed that although there were a few cases in which the more severe non-conformist work morality was a strong influence on performance most of the non-conformist over-achievers were not regular churchgoers nor did they show any of the signs of self-abnegation associated with non-conformity. Thus we had to reject the hypothesis that there was any systematic relation between ability and intrinsic motivation.

It has not, then been possible to identify any factor of general applicability which would explain over- and under-performance. But turning to immediate environmental factors there appear to be a number of negative indications of poor performance, and the presence of two or three of these in the individual case results in a cumulation of conflict and distractions which lowers performance. Some of these are: an excess of sociability, dislike of mathematics, excessive card-playing, much time spent with a girl-friend, a lack of friends and too little work. (Amount of work as such does not discriminate between over- and under-achievers, but there is an absolute minimum of about 10 hours a week which some under-achievers fail to reach.) Other negative indicators are television gazing (over 10 hours a week) and much reading of fiction (most of the better students confine their reading to professional journals, electronics magazines and car maintenance manuals).

Of all these factors weakness in mathematics is one of the most important. There are many under-achievers who are good at mathematics, but some are weak, whereas nearly all the over-achievers are good at mathematics and like the subject.

The major differences between over- and under-achievers are set out below:

	Over-achievers (13)	*Under-achievers* (14)
Stated liking for mathematics	11	7
Others	2	7
Preference for group work on problems		
Preference for working alone	9	4
Participation in team games	4	10
No participation	8	3
	5	11

This evidence suggests that a liking for mathematics is important for achievement in E.E. and that many under-achievers do badly because they are not socially integrated in the department. Further correlates of performance are:

	Over-achievers	*Under-achievers*
More than 10 hours a week watching TV	0	6
Less than 10 hours	13	7
More than 12 non-technical books (mostly fiction) read in the last 3 months		
Less than 12	4	9
	9	5

These tables suggest that those who watch a great deal of TV or who read a good deal of fiction tend not to make good students in Electrical Engineering. These behaviours may be substitute or compensatory activities for the lack of participation in group life indicated in the previous tables.

In summary, we have attempted to explain the negative relation between test score and performance by assuming that in Electrical Engineering ability and motivation are negatively related. We have discovered no systematic relation between ability and intrinsic motivation, but we have found that under-achievers are more vulnerable to a number of negative factors. Since all students are equally exposed to these negative factors we must assume that the level of demand made by their course is such as to leave some of the abler students more open to distractions.

III. Concluding Discussion

It is a simple matter to discover whether selection might or might not be improved by the use of psychological tests. The conceptual difficulties are minimal and are limited to choosing tests or other predictors which might be appropriate. The practical difficulties are those of making time available for testing, arranging for some quite

routine calculations to be performed, and assessing the reliability and importance of the benefits achieved by additional selection. What is not always realised is that this, the classical case, assumes that selection is to be improved for a *fixed* training. That this is indeed a very limited case has been clearly demonstrated by Cronbach and Gleser (3).

One interpretation of our present data is that one department is not making sufficient demands upon its abler students. This is supported in part by the comparison with the correlations found in another department whose undergraduate course is at least superficially similar. Further, and perhaps more convincing support is given by the data obtained from the students' attitudes and work habits. Students in the one department are, for example, more prone to take up distracting and time consuming activities which are unrelated to their department's interests than are students in the other.

Without this supporting evidence we would have to fall back on a reasonable but difficult argument. We would have to argue from a knowledge of the factorial composition of the tests that correlations of a certain order could be expected between certain kinds of tests and certain kinds of examinations. For example, on the basis of many previous studies, a positive correlation between scores on a perceptual test and marks in Engineering Drawing would be expected. By the same token, other correlations would be expected to be low if not zero. *A priori* we should not have expected the correlation of 0·46 between verbal test score and Engineering Drawing which was obtained in Mechanical Engineering. This correlation appears incongruous and may suggest that either the course or, more likely, the examination is unnecessarily verbal in content. Whereas verbal ability may afford some prediction of performance in all written examinations it should not be highly correlated with technical and practical tasks.

To sum up, if test-examination correlations are high then either we can improve selection or identify unnecessary demands made by the course or examination: if the correlations are low, zero or even slightly negative and we have a reasonable belief that the abilities measured by the tests are relevant, then there is a strong indication that demands that could be made are not being made.

There is currently an increase in the methods of selecting students. It is a difficult task to select a small number of students from an increasingly qualified applicant population. There exist for the most part low or even zero relationships between possible

predictors and examination results. This is the result either of inappropriate choice of predictors or of training courses which do not make the best of the ability that they receive. While much could be done to improve prediction, it seems likely that training is infinitely more variable and adjustable than are selection procedures.

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TRENDS IN RELIGIOUS EDUCATION

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I

THE year 1964—halfway between 1944 and 1984—is a time of stocktaking in the field of Religious Education. Since 1944 it has been a compulsory subject for all children in schools, except for those withdrawn by parents on the grounds of conscience. After two decades of Agreed Syllabus Religious Education it is appropriate to ask what it is achieving, and whether the methods so far employed are appropriate, and, if not, what should replace them.

Because of the confusion of thought about religion at this stage of human history, the opportunities for Religious Education provided by the 1944 Education Act have not been fully utilised everywhere. But although the subject may have been skimped or evaded in certain schools, a great deal of systematic, conscientious, and informed teaching about the beliefs and implications of Christianity has been given in many others. Hard thinking has gone into the discussion of aims and methods, the construction of syllabuses, lesson books, and aids to teachers. None the less the feeling is abroad that the subject is not being as effectively taught as it might be, and that the results are not as obvious as was hoped. There has been no observable increase in national godliness. Juvenile delinquency and adolescent apostasy would appear to have increased. K. E. Hyde (1959) has shown that the attitude of children to the idea of God and to the Church and to the Bible steadily declines during their time in the secondary school. The 1963 report of the Education Department of the British Council of Churches openly questioned the effectiveness of Religious Education in schools, and Sir Richard Acland has challenged the methods employed in his book roundly entitled *We Teach Them Wrong*. Is this merely crying "Wolf"? If not, what has happened that so much optimistic and dedicated labour has met with only partial success? Are the Agreed Syllabuses misconstructed and the classroom methods used inappropriate? If so, how should they be revised? Can the research that has recently

been done into the nature of children's religious thinking help in the revision? Have new factors entered into human thought that could not have been foreseen in 1944?

It is the aim of this article to try and answer, in part, some of these questions, and to suggest tentatively the sort of Religious Education that might profitably be attempted in the coming two decades.

II

Any attempt to rethink Religious Education and to foresee its future in a practical way must take into account three comparatively new factors.

(1) *A change in theological thinking*

Religion, which deals largely with spiritual ideas, must, by its very nature, be expressed in symbols. Its thinking proceeds by allegory and metaphor. The symbols may be material things, and the allegories stories of material things, but they represent some truth that cannot, without them, be thought about at all, and they have little significance if taken literally. The Bible writers, the early Christian fathers, and many medieval Christian thinkers recognised that this was true of their faith. But with the success of the physical sciences and the technology that follows from them, human thought has become increasingly earth-bound, and Christians and non-Christians alike have tended to mistake religious symbols for a literal expression of truth. It has become "part of our mental furniture" to think of God as a material entity, responsible for all other material entities and occasionally breaking into the system described by science to modify it and to manifest himself through a "miracle". As the idea of the invariability of the law of cause and effect has taken hold of human thought this view has become increasingly unacceptable. Further, as investigations have been extended downwards into the atom and upwards into space, God has been pushed further away from human experience. We are forced, therefore, to the conclusion that God as we had thought of him, as a material entity, does not exist, and that if the word God is to mean anything it must refer to something deep in human experience, to be looked for in that experience and not outside it. The writings of theologians such as Tillich, Bonhoeffer and Bultmann have for some time been suggesting that a true understanding of the Christian religion involves dispensing with a materialistically based approach and seeing its symbols

again as symbols, its myths as myths, and not as necessarily historical events. Their ideas have been popularised by the Bishop of Woolwich's famous *Honest to God*, which has been found helpful by many who wished to be sympathetic to a religious view of life, but could not reconcile the orthodox expression of Christian doctrine with their experience.

This new approach to religious thought, however, raises difficulties for teaching in schools. Not everyone is yet influenced by the ideas of science. Many indeed can sincerely accept the symbols of religion as factual and perhaps would regard such acceptance as a necessary defence of the faith. A large number of church-goers and scripture teachers are of this opinion. In addition the Agreed Syllabuses were constructed before the ideas of the "new theology" were widespread, and presuppose a somewhat literal-minded approach to Religious Education. The question is, therefore, raised as to whether Religious Education can absorb the new ideas without a radical change in both syllabuses and personel. The newer syllabuses do not seem greatly different from the older ones in this respect. Furthermore, even if such changes were made, are the ideas of Tillich and Bultmann such as can be understood by children, especially in the lower forms? Loukes (1963) has remarked that "a teacher who reads Tillich with 3D in mind will be forgiven his hesitations".

(2) *Recent research into the development of religious ideas in children*

Much study has been made of the way in which children's thoughts develop in other fields, but only recently has this been extended to include religious thinking and the manner in which religious concepts are formed. It is now recognised, however, that just as children have a reading age and a spelling age, so they have a "religious age", and must be presented with material appropriate to their age and led progressively from one age to the next. The work of Dr R. J. Goldman and others has demonstrated statistically what many observant teachers had long felt in their bones, i.e. that the material used in Religious Education means different things to children at different ages, and if presented at the wrong time, or in the wrong way, was not merely meaningless, but inhibitive of further religious growth.

It would seem that in the gradual development of religious thinking in childhood and adolescence there are three stages which have significance for the strategy of religious teaching.

(i) Up to the age of about 12 or 13 years the child's thinking about

religion, as about all other subjects, tends to be concrete and literal. Only after that age do genuine religious insights begin to develop. Thus a child of, say, 10 years, hearing a Bible parable, will absorb the literal facts of the story, but fail to perceive the underlying truth the parable is intended to convey. Worse still, a story which metaphorically represents God's nearness or power, such as the Burning Bush incident or the coming of the Spirit at Pentecost, will convey to him the impression that divine action in the world takes place through material manifestations, and perhaps only through them. This impression may well inhibit a deeper understanding of these stories at a more mature age. Goldman (1964) writes of this: "Severe limits to religious thinking are set by limited experience and mental maturation. The major limitations appear to be literalism and concretistic thinking until early adolescence."

There is the further possibility that the use of unsuitable material may cause children to acquire the habit of using theological words and phrases which mean very little to them. They happily make the right responses mechanically, without having the corresponding thoughts in mind. The danger is that the pupil will acquire "a religious vocabulary which has no conceptual substance" (Goldman, 1962).

(ii) As he proceeds to propositional, hypothetical thinking, about the time he is in the lower forms of the secondary school, the pupil also comes into contact with the logical-scientific view of the world. He has his first acquaintance with the scientific method in his early lessons of chemistry and physics. He may then have two ways of looking at the world, a theological way derived from his Religious Education teaching, and a logical-scientific way derived from other subjects. If his previous Religious Education has been of a dogmatic and literal-minded kind these two views may conflict, and lead to the abandonment of the one or the other. It is more desirable, however, that he should be helped to relate the two, so that his thinking contains neither irresponsible fancy nor unimaginative materialism.

It is perhaps worth noting that the upsurge of religious feeling that often occurs at this age may be the result of these conflicting views. The logical-scientific view is new, impersonal and frightening, and the way to avoid confronting it is to retreat into the theological world in which the pupil has previously lived. A violent reaction may follow, and the writer has observed that boys who show most religious fervour at 13 are often those who are most angrily opposed to religious ideas at 16.

(iii) As he relates his two views of the world, the adolescent, now in upper forms of the secondary school, has to come to a decision about religion. His experience is then wide enough for him to adopt a philosophy, which he may well hold for the remainder of his life. He is thinking out his religion in an adult way and chosing his faith, even if that faith is atheism. Michael Argyle (1958) has recorded that 10-18 years is the age of religious awakening, and that sometime during this period many make a decision for or against the religion of their childhood, the modal age for that decision being 15. One of the aims of Religious Education is surely to see that that decision, whatever it may be, is based on adequate information and experience. If previous Religious Education is of an inappropriate sort, the decision will not be informed. It may even prevent the children facing up to the decision at all. The decrease in favourability of religious attitudes on the part of secondary school children, noted by Hyde, may be due to this decision being made on incomplete data because the previous religious teaching has been presented in such a way as to cause total rejection of all religious ideas before the time of decision is reached.

(3) *The importance of attitudes*

Hyde (1959) as well as noting increasingly unfavourable attitudes to religious ideas among secondary school children, also related their acquisition of concepts to their attitudes. He discovered that those with the more favourable attitudes acquired a more extensive grasp of the subject matter of their lessons. The conclusion would seem to be that one of the primary tasks of the teacher of Religious Education is to induce favourable attitudes in order that communication may take place. Hyde writes of this:

> Positive attitudes are necessary for religious learning, and in the absence of positive attitudes only very restricted learning is possible.
>
> Myth and symbol have reality for those with religious attitudes. The problem of communication hinges on the problem of communicating attitudes.

While admitting that attitudes may largely be conditioned by home and by experiences outside the classroom, it may be that the task of the Religious Education teacher at those stages, where conceptual knowledge is impossible, is largely to develop these positive attitudes.

III

What effects are the rediscovery of the symbolic nature of many

Christian statements and the new appreciation of children's religious psychology likely to have on the future pattern of Religious Education? The following suggestions must be regarded as speculatory rather than prophetic, and liable to be proved wrong by events. Nevertheless certain trends are beginning to emerge in classroom practice, and it is possible to see a little into the future, if only "as through a glass darkly". Reform of the Agreed Syllabuses is overdue and has already been undertaken by some local authorities. It is, furthermore, likely that the aims of Religious Education ought to be different in junior schools from what they are in secondary schools, where the different psychological approach of the pupils invests them with different needs.

(1) *Revision of the Agreed Syllabuses*

It is perhaps not a misstatement to say that the syllabuses used up to the present have taken little cognisance of the manner in which children's thoughts about religion change and develop. They assume much the same sort of Biblical material may be used with pupils of all ages, but that the older ones can absorb more of it. In other words the material was graded quantitatively rather than qualitatively. The same stories were included year after year, but each time the children were supposed to listen to them in greater detail. This method not only ignores the now known fact that certain stories convey an undesired impression to younger children, but also that the older children are inhibited from thinking again about the stories, partly from boredom induced by over-familiarity, and partly from reacting to the erroneous impression they had previously formed. The present writer has elsewhere (1956) pleaded for a qualitative grading of Biblical material, suggesting that it may be possible to sort it into several categories, such as (*a*) plain history, (*b*) history told (or mistold) to support a given thesis, (*c*) stories and fables, both historical and literary, with a moral or religious teaching, and (*d*) allegory and mythology. If some agreement could be reached about a classification of this sort—no easy matter when Christians themselves are widely divided about the nature of their scriptures—then each category might be introduced into the school syllabus at the time when the pupils would be able fully to understand the nature of the material being studied. The ideal would be to submit every part of the Bible to the rigorous tests and analyses that Goldman used with the stories of the Burning Bush, the crossing of the Red Sea, and the Temptations, to discover at what age it can satisfactorily be used with

confidence that the children will understand its religious significance in the way intended. This may be too arduous a task to be practicable, but it might be tried on the more popular passages, and certainly some efforts must be made in syllabus revision to match closely the Biblical material to the pupil's conceptual level.

(2) *Religious Education in the Primary School*

If children are indeed incapable generally of thinking about religion in a symbolic way during the primary school age, the question is raised of what sort of Religious Education, if any, can be given at that age. Most of the traditional Biblical material seems at first sight inappropriate and misleading. Acland (1963) has argued that, since they are in a stage of development similar to that reached by the whole human race several centuries ago, an old-fashioned presentation of religion is appropriate to them. While agreeing that a child's view of religion must necessarily be childish, one would question Acland's view on the grounds that what children learn at this stage will influence radically their ideas at a later stage. If they are now taught ideas that later seem to conflict with their experience and have therefore to be discarded, or dogmatic ideas that are incapable of later refinement, they are not likely to make the adolescent choice of a religion in an informed way, or even to face up to the fact that they have to choose.

What, then, can reasonably be taught in the junior school? There are three areas in which experiments might be made.

(*a*) There are Bible passages which deal with personal relationships, the relationship of man with man and man with God. Such relationships are at the root of the Christian religion, the commandments of which are "Thou shalt love the Lord thy God, and thy neighbour as thyself", and young children are capable of experiencing those relationships. Therefore such stories as the familiar Prodigal Son and the Good Samaritan are appropriate, as well as Jesus' encounter with the rich young man, Jacob and Esau, Joseph and his brethren, Peter's denial and his subsequent restoration, etc. There is no lack of such material, provided it is carefully selected, although some of it needs disentangling from its metaphorical expression, as in the case of Jacob's ladder.

(*b*) There is the material which contains concepts the children may not be able fully to understand at the moment, but which is capable of being refined at a later date and related meaningfully to

their experience. We do not know enough at the moment of children's religious thinking to decide exactly which Bible stories fall into this category, but it is possible that stories of the Baptism of Jesus and the Temptations are of this type. As explained below, the success of this type of material depends on how far teachers in the secondary school are able to assist children to make the necessary refinements and reappraisals.

(*c*) Most important of all, Religious Education in the junior school must aim to give children the right attitudes. If it can inculcate favourable attitudes to the idea of God, to the Church, to people and created things, to the Bible, and to worship, children will not only learn more fully about these things, but will also be prepared to think more seriously about them, when the ability to think in a genuinely religious way has been acquired.

This raises the problem of how attitudes are induced. It is possible that they are frequently transmitted unconsciously, and if the teacher himself has the right attitudes he will transfer them to the children by phrases and by gestures, and by the way he deals with topics unrelated directly to religion. The catch-phrase "religion is caught, not taught," may really mean that the favourable attitudes which facilitate the formation of religious concepts are caught rather than taught. If this is so, the teacher may be a little daunted by the consideration that his pupils are constantly exposed to other attitudes at home and outside school which will frustrate his efforts. Yet he can still do much consciously to impart the attitudes he desires. Perhaps the secret of directly imparting a favourable attitude in the classroom is to present the work in such a way as to make the children feel that they are personally involved. This goes further than making them feel that the study is "relevant to their lives". It involves giving them things to do which link them directly to the lesson, and enable them to say afterwards; "Look; We did that." Perhaps an example of this method may be cited. A teacher discovered that the children were concerned with the Berlin Wall and identifying themselves with families divided by that barrier. She discussed with them the motives (greed, fear, hatred, etc.) which had caused the wall. Next she sketched the outline of a large picture of a wall, which the children painted. In doing so they labelled the bricks "Greed", "Suspicion", "Fear", "Hatred", etc. She then led them to make a further picture of Jesus with His Cross breaking through the wall and allowing others to pass through. Thus she led to the teaching of the Atonement. While we may question whether the children are able to grasp the

concept of the Atonement, which numbers of sophisticated Christians would find hard to explain, the method had an effect on the children's attitude to Good Friday and Easter, and seems to be the sort of presentation that is needed.

The influence of the morning assembly on attitude is important, because this is the only experience many children have of worship. Where this is a dull and formal procedure unfavourable attitudes alone can result, and the practice of involving the children, by allowing them to plan and conduct the prayers, relating them to events that happen in the neighbourhood and to things they hear on the radio or see on the television, might well be extended.

Hyde (1959) writes "Men have lost contact with traditional symbolic expressions of belief. When children grow up in a Christian culture, they learn from repeated experiences of worship and from the attitude of their homes the significance of the symbols. Without this background the symbols lack content." The purpose of primary school Religious Education may be to give the children some of that background, so that when they come to be able to think symbolically, the symbols will have content.

(3) *Religious Education in the Secondary School*

In the secondary school it is possible to give more direct religious teaching, but it is necessary to distinguish between the lower forms and the higher.

Up to about the age of 15 the children are beginning to think in formal concepts and to come to terms with the logical-scientific view of the universe. It is therefore necessary to help them to refine the crude and concretistic religious ideas they have previously used, and to show them that truth can be subjective as well as objective, and that it can be expressed metaphorically and symbolically as well as in material and historical form. This means working over most of the Bible stories and leading the pupils to see that the questions to be asked of each story is not "Did it really happen?" but "What does it signify?" or "What spiritual experience is it portraying?" The idea of symbolism must be introduced and common Biblical symbols and thought-forms explained. For example, the story of the Baptism of Jesus has to be re-presented as an intense subjective spiritual experience rather than as a bizarre incident of thunderous voice and dove. The tongues of fire and the wind at the Pentecost have to be explained as Jewish symbols for the sense of the nearness of God,

and not necessarily to be taken literally. If the major portion of Scripture can be reviewed in this way, adolescents are more likely to see the Bible as a book with meaning, speaking to their condition, than to dismiss it, as many do, as a set of irrelevant and incredible stories, and "disproved by science". Moreover the deepening of their religious experience and thought, which this type of teaching brings, is sometimes remarkable.

When insight into the real nature of religion has been achieved, there remains the application of it to problems of behaviour and social relationships. It becomes increasingly clear that this is the function of Religious Education in the fifth and sixth forms. By this time pupils are bored by a superficial study of the Bible, but, apart from the keenly committed church-goers, insufficiently interested to study it systematically in depth. They are eager, however, to talk of such topics as the colour bar, sex and marriage, and personal relationships generally. Provided they do not feel they are being preached at or indoctrinated, they are willing to listen to the religious approach to these matters. In addition they are eager to know what world religions other than Christianity have to say. An inquiry on which the writer is engaged asked sixth formers to state their opinion of Religious Education. The answers include a preponderance of requests to be told of all major religions, to be allowed to discuss freely the practical application of them, to voice their own views, and to be permitted to make up their minds where truth lies. Loukes (1961) has described this "problem method" of teaching, pointing out its difficulties. It depends on the prevailing interest of the pupils and may seem unsystematic. The discussions may be formless and inconclusive, and the arguments ill-informed. Loukes calls it "anti-syllabus" and "anti-method". But if the teacher is prepared tactfully to guide the discussion, to supply information when needed and to correct misinformation when volunteered, this would seem the most profitable approach to sixth form work. Pupils who have experienced it seem favourably disposed to the subject and report that they find it relevant, interesting and useful.

Another approach to sixth form Religious Education is being tried in some places, consisting of an examination of the implications of the pupils' other studies, with a view to arriving at a coherent philosophy. *Learning for Living* gave example of this in its issue of January 1963 and the British Council of Churches has a working party drawing up a series of syllabuses of this type which it hopes to publish shortly.

IV

Religious Education is thus in process of being rethought. Rethinking is forced upon it by new methods of theological expression and deeper appreciation of childrens' understanding of religious ideas. This article has tried to forecast, in general terms, some of the trends that may result. Details have yet to be worked out in the light of experiment, but these factors would seem needful to be borne in mind if the subject is to make respectable impact on the education of children in the next few decades:

1. The rediscovery of the subjective nature and symbolic expression of religion.
2. The fact that younger children cannot think with genuine religious insight, but need to be given the right attitudes if they are to think seriously when they can.
3. The need to help them to proceed from literal to symbolic thinking in early adolescence.
4. The advantage of informed and directed discussion in the upper forms on subjects rather wider than those that have formerly been included in the syllabus.

If the practical classroom application of these considerations can be worked out, the Cinderella subject may yet come out of the kitchen and go to the ball.

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PATTERNS OF BEHAVIOUR IN SECONDARY MODERN SCHOOL CHILDREN

A SECOND REPORT FROM BUSCH

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I

A DESCRIPTION of the aims and procedure of the Birmingham University Survey of Children's Habits (BUSCH) has already appeared in this journal (Volume 15, No 1) together with some account of the first results obtained. A second survey has been carried out in order (i) to obtain further information about children, and (ii) to validate the measuring instrument—the controlled diary—in which slight modifications had been made as a result of the experience of the first survey.

The revised diary form consisted of a double sided foolscap sheet showing every quarter hour from 7.0 a.m. to 12 midnight (in the first test it had been 7.0 a.m. to 10.30 p.m.) with space to enter "all the things I did", "with whom" and "where". The children were asked to complete the forms for a particular Wednesday, Saturday and Sunday in early December 1962 with the safeguards and guarantees of secrecy as before. The coding of the data was extended by introducing four new categories which the first experiment seemed to indicate were necessary: 16 Visit to doctor, dentist, etc., 44 Riding and fishing, 45 Solitary play (with train set, dolls, etc), and 66 Theatre. The investigation took place at a secondary modern school in a mixed residential area in a large industrial city, and the diaries were given to the first and third streams of all four years of the school: in all 224 children were involved (127 boys, and 97 girls). This school will be referred to as School B: the school where the first survey was carried out as School A. The following profiles based on the averages of each year group will give some indication of the way in which children in School B are occupied.

II. Profiles

Barry in his first year

Barry is in his first term. On Wednesday he gets up at 7.34, dresses and breakfasts (he will spend slightly over 1½ hours over such personal matters during the day): he travels to school (1¼ hours will be spent on such short journeys), and will of course spend a good part of the day there. He will probably spend about 20 minutes at some physical game like tig or ball with his friends; and will spend 1½ hours otherwise in their company. He might visit a youth club (he and his friends spend an average of 25 minutes there). He will look at a book for about 12 minutes, probably a paperback; but it is unlikely he will do anything else significant during the evening except watch television. This however, he will do for 2 hours 17 minutes. He will go to bed at 9.33.

On Saturday he will stay in bed until 8.58. He will spend rather longer over personal activities (1 hr. 48 m.). He will make nearly an hour of short journeys; he will find himself doing 41 minutes of household chores and errands, but he will also spend 25 minutes in a job or jobs for which he gets paid. He will still to a lesser extent (12 m.) engage in "playground games" with friends, but he will also associate, perhaps playing a non-active game like cards, with them (1 hr. 6 m.) or with a parent or other adult (28 m.). He will spend nearly an hour at the shops, either in making purchases or in window gazing or touring department stores. He will spend 17 minutes with a book: or visit the cinema (the Barries spend an average of 40 minutes there). He will go to bed at 10.17.

On Sunday Barry gets up even later—9.30. He spends more time over personal matters, eating his meals with more ceremony (over 2 hrs.). He might take a short trip (½ hr.). He will still play active games with friends (21 m.) and associate with them otherwise for over an hour—and with adults for 13 minutes. He is quite likely to attend a place of worship (47 m.) and spend 25 minutes with a book. His homework will take him 16 minutes. He will watch television for over 3 hours 50 minutes and listen to the radio for 20 minutes. He will go to bed at 9.43, much earlier than on Saturday, and only a few minutes after his weekday bedtime.

Barry in his fourth year

He is now probably 15. On Wednesday he no longer feels it necessary to get up so early and postpones doing so until 7.53. He takes longer over personal activities and meals (1 hr. 43 m.) and for

some reason longer in travel which is mainly to and from school (1½ hrs.). These differences may possibly be due to less close supervision by parents. He will play a physical game with his friends for half an hour, and spend over 1 hour 5 minutes otherwise with them. At 11 he spent a little of his leisure with adults; now scarcely any. He might go to the youth club, but is less likely to do so than he was (12 as against 25 minutes). He will spend more time with comics and the papers (16 minutes) but less with a book. However, he will do 50 minutes homework; and, no doubt because of this his TV viewing drops to 1 hour 25 minutes. Occasionally he will go to the cinema; but he has now acquired some records and will spend 20 minutes playing them. He claims to spend 25 minutes with a girl. He goes to bed at 10.55.

On Saturday Barry gets up at 8.54, and does about a ½ hour of household chores and errands (rather less than the 41 minutes he used to give); but he has a paid job (1 hr.). He spends about 43 minutes with friends in (say) a game of football; and a little more in talking, walking or playing a non-active game with them. Again he spends less time with adults than he used to (13 minutes). He wanders round the shops (36 m.) but less than formerly. There is a slight chance he may have taken up painting for instance, or music, since the age of 11; he reads more comics and papers, but very few books. He will do 23 minutes homework. His consumption of the mass media has risen—3 hours 49 minutes with TV, 18 minutes with radio. He might visit the cinema (but not more so than before); but he is more likely to watch a football match or other organised sport—though not *very* likely. He is likely to have a girl friend (average of ½ hr.). He goes to bed at 10.46, for some reason earlier than on Wednesday (a TV programme might explain this).

On Sunday Barry gets up at 9.35; lingers over meals, dressing, toilet (2 hrs.). He will do little to help in the house. He might go to church, and to a youth club (perhaps a Sunday evening meeting of a church youth fellowship) for these items average ½ hour each. If he has a hobby, which is less likely than when he was 11; he will spend more time on it to-day than on the other days. He might see a girl friend. He will watch 3 hours TV, listen to a ½ hour's radio, and 41 minutes of his records. He will go to bed at 10.24, even earlier than on Saturday.

Sandra in her first year

On Wednesday Sandra gets up at 7.43. The most notable differ-

ence between her use of time and Barry's lies in the routine activities; she takes longer over dressing, meals, toilet, than he does (1 hr. 50 m.); on short journeys (1 hr. 40 m.) and on household chores (14 minutes as against Barry's almost nothing). She spends more time in playground-type games, a little less in walking and talking with friends, but more with adults—than he does. It is improbable that she will attend a youth club; but she will read a book (16 m.), though not usually the papers. She will watch TV (2 hrs.) nearly as much as Barry does. Bedtime is 9.46.

On Saturday she gets up at 9.10, later than Barry; but makes amends by the amount of chores she does—1 hour 23 minutes, as against his 41 minutes. She will spend some 45 minutes walking, talking, or playing a non-active game with friends; and an almost equivalent time in the same way with adults. Shopping, shop-touring, is a rather more important activity for her than for him (1 hr. 18 m.). She will watch TV for 3 hours 19 minutes, and goes to bed at 10.12.

On Sunday she gets up at 9.35 and spends about 1 hour 48 minutes (rather less than Barry) on personal tasks and meals, more than she did on Saturday. She has 45 minutes of chores as against his 36; she does play some active games with friends, but associates with them in walking and talking more, for 1 hour 13 minutes. There is a chance she will go to a youth club, but a much greater chance she will go to church (54 m. average). She might "make things", e.g. sewing or dress-making; she reads (12 m.); she does homework (17 m.). She watches television for $3\frac{1}{2}$ hours; listens to the radio for 20 minutes. She goes to bed at 10.4, later than Barry.

Sandra in her fourth year

On Wednesday she rises at 7.50; she spends longer on personal matters and meals (2 hrs. 4 m.) than in her first year: she plays fewer "playground games" but spends longer associating with her friends in other ways. She spends much less time in company with adults (9 as against 56 minutes previously). There is some chance that she might "make something"; that she might paint or practise an instrument. She might glance at a comic or paper; it is improbable she will read a book; she will do perhaps 25 minutes homework. She watches television for 2 hours 8 minutes, and listens to the radio a little. She spends 52 minutes in company with a boy. She goes to bed at 10.45.

On Saturday, having risen at 9.23 she spends longer than any

other year or sex on personal tasks and meals (2 hrs. 22 m.); and does more chores (1 hr. 27 m.) than any except third year girls (1 hr. 35 m.). She will not play any active game; but will walk or talk with friends for nearly an hour; and will spend also 1½ hours in shop-touring. She might go to a youth club (17 m.); she might "make things" (12 m.). She watches TV for 2 hours 40 minutes (over an hour less than Barry); radio occupies 20 minutes. She might perhaps visit the cinema or listen to records. She spends just over an hour in company with the opposite sex. She retires at 11.4.

On Sunday she gets up at 10.4; spends 2 hours on herself and over meals; nearly 1½ hours on chores. She does not usually play any active game with friends; but talks, walks or plays passive games for 1 hour. There is a chance she will go to a youth club; she might go to church, but is much less likely to than in her first year (20 against 54 m.); she might glance at the papers; she is unlikely to read a book, but she has 39 minute homework or writing. With TV she spends 2 hours 56 minutes; radio 15 minutes, records 13 minutes. She associates with a boy for 1 hour 7 minutes. She goes to bed at 10.52.

III. Patterns of Activity in School B Children

As they grow older these children spend more time in routine activities such as toilet, dressing, meals (code 11); more on Saturday than on Wednesday; more on Sunday than on Saturday (except third and fourth year girls—who perhaps take longer dressing to go out). The girls always take longer than the boys (fourth year girls 2 hrs. 22 m.). It would be interesting to know how these figures compare with adult patterns. The girls always give much more help with domestic chores and errands than the boys; fourth year girls give 52 minutes even on Wednesday, and 1 hour 45 minutes on Sunday (code 13). A small paid job, perhaps a paper round, is common among the boys on Saturday, and some of the older girls have one (code 13).

On the whole on these three days the children do not spend much time on their own in any physical activity such as a cycle ride (the season was against this). They enjoy an active game in the playground, the girls less so as they grow older; but the girls are anyway much less likely to play such a game at weekends (code 22) than the boys. Association with friends in walking, talking or playing some non-active game (code 31) is common; such association with adults drops pretty consistently through the four years (code 32). Shopping as a pleasure, often with window-gazing and department store touring,

is common, with third year girls spending two hours in this on Saturday (code 33). All groups register some church going; it is more usual with girls than boys, and with younger than older children (code 36).

Some newspaper, comic, or magazine reading is recorded (code 51)—the highest is fourth year boys on Sunday (about 20 m.); the girls always read them less than the boys; and in the reading of books, probably paperbacks, it is again the boys who usually read more. There is a fair consistency about the amount of homework or other writing each sex does, round about 40 minutes on Sunday in the fourth year (code 53).

The highest single occupation by far is TV watching (code 61). This is never less than 1 hour 25 minutes on Wednesday; and its peak is reached by third year boys on Saturday (4 hrs. 6 m.). On Wednesday most groups watch about 2 hours; on Saturday the boys watch about 4 hours, the girls on average 2 hours 50 minutes. On Sunday the boys watch for approaching 4 hours, girls for about 3. Radio has still a certain appeal; on Sunday about a ½ hour. The cinema (code 63) is not much visited on the Wednesday; but many of the boys will go on Saturday; and a fair proportion of the third year girls. Some of the older children will have records and will spend a few minutes with them on any day (code 64).

TABLE I

AVERAGE TOTAL TV VIEWING (IN HOURS)

Wednesday		*Saturday*		*Sunday*	
Boys	*Girls*	*Boys*	*Girls*	*Boys*	*Girls*
2·075	1·474	2·591	2·459	3·125	2·990

Boys claim to associate with girls much less than girls claim to associate with boys. On Wednesday fourth year boys claim the company of the opposite sex for an average of about 27 minutes whilst fourth year girls claim it for about 52 minutes; on Saturday the same boys claim ½ hour, the girls an hour; on Sunday they claim about 22 minutes, the girls 1 hour 8 minutes.

Items in which there are nil or small return are also noteworthy. There is scarcely any frequenting of cafés, not much youth club attendance. Low returns appear under "making things" (any creative occupation from dressmaking to model building) and these returns are slightly in favour of the girls; "painting, music, etc." are again low, but not quite so low, and in favour of the boys, some of whom by the fourth year have obviously acquired such interests.

No public library visiting is recorded by any group; no girl admits to visiting an organised sport (e.g. a football match). Scarcely any smoking (or drinking) is recorded.

IV. Schools A and B: Pattern of Children's Activity

To draw the profile of a boy and girl from School A would be very much to draw the profile of Barry and Sandra from School B. There are however certain differences.

Children of School A spend much more time with their friends on Sunday in active games; all the boys spend between 25 to 45 minutes longer; and the first year girls 50 minutes longer. This is what one might expect; there would be less tolerance for it in a mixed residential than in an inner ring area. On the other hand, contrary to expectation, School B boys have twice as much paid employment on Saturday as School A boys (perhaps insufficient jobs are available). In the children of School A there is a lower level of attendance at places of worship; but it is consistent throughout the four years, whereas the children of School B fall off. As in School B, School A girls claim on the whole more association with boys than the boys do with them (except where School A fourth year boys claim nearly two hours on Saturday, as against 40 minutes the fourth year girls claim). School A first year girls claim some boy friends, which School B first year girls do not. In both schools boys watch more television than girls do. Children of School A do scarcely any homework: of School B a fair amount. On the whole on Wednesday the children rise later as they grow older. Saturday they get up about 9. On Sunday first years get up about 9.30, but fourth years often stay to 10 or much later. A comparison of bedtimes between Schools is not possible because the diary for A finished at 10.30. But in School B it is nearly always going up to 11 or even after before the children are in bed, with the girls later than the boys at week-ends.

TABLE II

Average Getting-up Times (a.m.)

		Wed.	*Sat.*	*Sun.*		*Wed.*	*Sat.*	*Sun.*
A	Boys 1	7·42	9·90	9·35	Girls 1	7·37	8·57	9·32
B	,,	7·34	8·58	9·30	,,	7·43	9·10	9·35
A	,, 4	7·40	9·8	10·9	,, 4	7·43	9·15	10·2
B	,,	7·53	8·54	9·35	,,	7·50	9·23	10·24

Average Going to bed Times (p.m.)

B	Boys 1	9·33	10·17	9·43	Girls 1	9·46	10·12	10·4
	,, 4	10·55	10·46	10·24	,, 4	10·45	11·4	10·52

V. Discussion

(i) The general picture in School B is of children seeking independence from institutions such as home and church; association with adults declines, church-going declines, part-time jobs increase. The role of house help, however, is with the girl at 11, and grows in importance, whereas the boy largely avoids it. Little time is spent alone; most in company of contemporaries. The chief leisure occupations are television watching and shop touring—by no means necessarily to buy anything. The importance of shop touring is to be expected: in both schools the diaries were completed a few weeks before Christmas.

(ii) Some of the differences between pupils in the two schools can perhaps be accounted for in terms of the socio-economic background: A is in an inner ring redevelopment area, B in a mixed residential area. For instance playing games on Sundays and earlier "dating" and "homework" might be expected more from the former than the latter. The lower viewing figures that were recorded in School A were probably due to the fact that the diary then finished at 10.30. The higher figures of School B are in line with other surveys. In any case the evidence of both schools seems to indicate that girls watch less than boys; perhaps the programmes do not suit them so well—this might apply on Saturday when there is a good deal of sport broadcast, for instance, but it leaves Wednesday and Sunday unaccounted for. Perhaps their large number of chores leaves them less time; perhaps they are just not all that keen on television.

(iii) A fairly consistent behaviour pattern appears with children of both schools. The schools have general similarities; both are multiple entry non-selective secondary schools in a large conurbation. The samples taken in both cases were of able and less able children in all four years. It seems reasonable to conclude that the controlled diary is measuring the general pattern fairly reliably. The additional items inserted in the code were not much employed on this occasion, but they might be needed in future. The extension of the diary to midnight was obviously necessary.

(iv) The validity of the measurement would also seem to be fairly well established in the main items; differences are often random. The form of the diary, which asks for all activities, probably means that the responses are less likely to be distorted than if questioning were focused on particular matters. All types of activity seem to have been recorded frankly with one or two exceptions. In School B it is

possible that the children were reticent about matters which they thought might carry the disapproval of authority—smoking (and possibly drinking); whereas associations with the opposite sex, which might seem a pattern of life which even adults accept, they recorded frequently. It is noticeable that fourth year boys in School A claim to smoke 16 minutes each on Wednesday, mostly in secret at playtimes, whereas their contemporaries in school B scarcely ever admit to smoking. A semantic differential on attitudes to authority, which is part of the BUSCH battery, may well prove helpful indirectly here.

(v) It is intended to conduct other surveys in different types of school and area now that the technique has been established as reasonably valid and reliable.

Note

The sorting programme was written in Mercury Autocode and machine code by H. J. Hallworth. The coding of the diaries was carried out by Mrs Joan Goode.

CODING KEY—SELECTED ITEMS

Routine Activities

11 dressing, toilet, meals
13 household chores and errands
14 paid employment

Physical Activities

22 in company (e.g. "playground" games)

Social Activities

31 talking or walking or playing non-active games with peers
32 talking or walking or playing non-active games with adults
33 shopping or shop-gazing as a pleasure
36 at a place of worship

Literate Activities

51 reading comics or daily papers or magazines
52 reading books
53 writing or doing homework

Passive occupations

61 television
62 radio
63 cinema
64 recordings

Double coding

100 with my boy/girl friend

TABLE III

Select Items for School B

		11	13	14	22	31	32	33	36	51	52	53	61	62	63	64	100
Wed.	B1	1·538	·069	—	·388	1·463	·163	—	—	·088	·163	·019	2·294	·106	—	·094	—
	B2	1·570	·18	·130	·060	1·34	·070	—	—	·090	·170	·140	2·940	·080	—	·110	·080
	B3	1·488	·2	·375	·581	·130	·088	—	—	·188	·075	·375	1·988	·030	—	·025	·037
	B4	1·739	·125	·341	·489	·102	·045	·057	·091	·273	·114	·864	1·443	·057	·114	·364	·455
	G1	1·894	·240	—	·558	·942	·317	—	·029	·029	·269	·087	2·067	·088	—	·019	·038
	G2	2·038	·213	—	·138	·225	·078	—	—	·138	·025	·163	1·785	·140	·200	·088	·575
	G3	2·080	·66	·030	·250	1·100	·08	—	—	·060	·090	·200	1·89	—	—	·050	·490
	G4	2·240	·865	—	·337	1·212	·154	—	—	·125	·067	·423	2·135	·106	·067	·067	·875
Sat.	B1	1·788	·695	·431	·244	1·113	·456	·994	·063	·144	·281	·113	3·681	·173	·669	·063	·131
	B2	1·450	·64	·460	·520	·800	·21	1·070	—	·100	·070	·100	4·010	·440	·470	·120	·100
	B3	1·425	·606	1·275	·606	·638	·075	·563	—	·169	·219	·294	4·256	·119	·163	·138	·369
	B4	1·693	·523	·966	·716	·784	·125	·602	—	·284	·114	·398	3·818	·318	·67	·023	·523
	G1	1·596	1·385	—	·105	·779	·712	1·317	·144	·048	·240	·221	3·327	—	·096	—	—
	G2	2·163	·913	·138	·288	·775	·3	·800	—	·138	·288	·125	2·700	·275	·200	·650	·263
	G3	2·361	·59	·240	·300	·650	·16	2·000	—	·051	·08	·150	2·37	·270	·810	·270	·740
	G4	2·375	1·45	·356	·096	·990	·125	·548	—	·192	·058	·115	2·663	·317	·192	·125	1·010
Sun.	B1	2·05	·6	—	·375	1·175	·225	—	·781	·106	·419	·256	3·898	·325	—	·940	—
	B2	1·960	·24	·050	·340	1·060	·18	—	·380	·150	·29	·390	4·06	·390	—	·110	·070
	B3	1·794	·325	·475	·194	·856	·469	—	·294	·288	·175	·369	3·906	·413	·313	·200	—
	B4	2·193	·193	·193	·216	·455	·159	·0450	·477	·318	·295	·67	3·000	·545	·080	·239	·386
	G1	1·820	·92	—	·110	·123	·35	—	·900	·020	·210	·280	3·550	·370	—	·050	—
	G2	2·400	1·238	·088	·100	1·050	·037	—	·700	·113	·388	·163	2·575	·538	·413	·588	·250
	G3	2·030	1·74	—	—	·700	·05	—	·390	·09	·110	·49	3·920	·620	—	·310	·260
	G4	2·038	1·49	—	·221	1·029	·231	·6830	·337	·183	·096	·634	2·779	·673	·250	·221	1·135

TRENDS IN THE TEACHING OF MODERN LANGUAGES

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"THE knowledge of at least one foreign language is an essential qualification for an increasing number of jobs. We should like to encourage students from every part of the University to learn a language and we should like to provide facilities for really practical instruction to allow a student to understand a language and speak it fluently."

This extract from the second Reith lecture entitled the "Pursuit of Learning" by Dr Sloman, Vice-Chancellor of the University of Essex, indicates very clearly the changed attitude to-day to modern languages, which have now become one of the really vital fields of knowledge and one likely to evoke a lively response from modern students.

Suddenly and dramatically modern languages have attained a new status; the outcome largely of various socio-economic pressures, recent researches in linguistics and in psychology and perhaps, most important of all, technological developments. The combined effect of these factors has contributed to bring about a widening of the aims of teaching modern languages, an increase in its scope, modifications of the content and methods used in teaching modern languages and, not unexpectedly, a number of problems still to be solved.

A consideration of these changes will be the subject of this article. It would be wishful thinking, however, to believe that such changes have already produced well developed trends. As in 1948 the picture presented by modern language teaching is still patchy and uneven but the black patches are fewer and there is an increase in the number of schools providing stimulating and lively language teaching (1).

AIMS

If we consider the aims of language teaching in this rapidly changing world of ours, three points must be borne in mind. In the

first place it is obvious that the ability to communicate is vitally important in many countries to-day. Secondly, language is bound up inextricably with culture, and language and cultural growth must be taken together. Thirdly, we are beginning to realise that the intensive study of literary texts is not necessarily the best way to develop language ability. Such ideas would seem to contradict the widely held belief in the study of language as an intellectual discipline.

The idea of intellectual discipline is, of course, a relic of the faculty psychology which dominated the latter half of the nineteenth century. Although the theory itself has been discredited, it is still observed in many places. It is, after all, the *raison d'être* for the inclusion of a foreign language in the grammar school curriculum. It conjures up visions of the teaching of the classics so grandly termed by Gladstone (2) as "paramount, the materials advisedly and providentially prepared in order that it might become the complement of Christianity in its application to the culture of the human being as a being formed both for this world and the world to come".

French as a "debased form of the classics", since it derives from Latin, was admitted grudgingly to the curriculum. It is not surprising then that the teaching of modern languages was entrusted very soon to the teachers of classics who taught French, as they taught Latin, by formal methods incorporating mainly grammar and translation. It is the effect of this teaching which has done so much to stultify the teaching of modern languages in England and to produce the shockingly low standards still obtaining in many schools.

The influence of the classical model was damaging for three reasons. It created a belief that learning a language was an intellectual discipline, secondly that this intellectual exercise had to be reserved for an *élite* and thirdly, in its acquisition, the oral use of the language was neither necessary nor desired. What is more, the example of the classics teachers did nothing to introduce any compensating vision or liberalising effect in the teaching of modern languages. The results were as barren as the teaching was lifeless and there was none of the expected transfer when the subject was dropped. It is a sad reflection on much of the teaching to-day that after five years of French many pupils have a confused and vague idea of the subject as a collection of grammatical rules and exceptions. The beauties of the French language, the glories of France, the great writers and thinkers of France, all remain unknown to them.

The aim of providing an intellectual discipline has also been the

principal concern of the universities. This is up to a point understandable but regrettable. The Universities tend to cater almost exclusively for the specialist, the academic linguist whose interests are either literary or philological. It is, therefore, not uncommon to find students spending long hours learning medieval French or Middle High German, while yet unable to express themselves adequately in simple everyday situations. Professor Mansell Jones writes: "At the University level there can never have been a time when so many undergraduates as at present had so insecure a grasp of the languages they have learned four or five years before leaving school." "We are liberally contriving opportunities for thousands of young people to learn languages, without our being equally concerned to ascertain whether the languages are actually learned or not by anything like the whole of this multitude of intended beneficiaries" (3).

The lack of opportunity for practical training in the use of foreign languages indicates a serious gap in our system to which attention has been drawn in more than one official report. There is still no centre in England comparable to the Dolmetscher-Institute of the University of Heidelberg, or the Ecole d'Interprètes of the University of Geneva, or the Sprachen-und-Dolmetscher Institut in Munich where students can acquire the more practical skills in foreign languages, with special reference to their use in foreign affairs, economics, commerce, science or technology.

It is time that our universities took stock of their existing courses and modified them in the light of modern needs. The introduction of linguistics and sociology would seem, at the present time, to be necessary studies for modern linguists which would open up new lines of advance. The languages centre therefore, which is being set up at present in the new University of Essex, with its numerous language laboratories, up to date equipment, and modern studies, marks an important milestone in the teaching of modern languages in our universities.

If, however, belief in language as an intellectual discipline is on the decline, the significance of language, as a means of understanding more fully people of different linguistic backgrounds, is attracting more and more attention. It is obvious now that "the culture and life of a people is not an adjunct of a practical language course, something alien and apart from the main purpose to be added or not as time and convenience allow but is an essential feature of it" (4).

This was one of the principles held by the Direct Methodists, some fifty years ago who regarded the learning of a foreign language

as communicating with a foreign people and having access, as Jespersen puts it, to "a people's soul". Spoken communication, therefore, was essential and had to precede the written use of language as it does in learning the mother tongue. Moreover, they believed that the use of the foreign language throughout was essential.

The Direct Methodists, however, failed for a variety of reasons. Although over-enthusiastic they did not always infect others with their enthusiasm. Many who tried the Direct Method were linguistically incompetent and inadequately trained to use a method which demands the highest skill and experience. They were not helped by existing conditions, size of classes and external examinations. Their teaching lacked system and the results were disappointing.

We nowadays realise as well as they did that the aims of modern language teaching must be accomplished in stages. The pupil must be trained to hear and understand the spoken word before he is able to use it; he must be able to speak before he is allowed to read, and lastly, and then not always, he must be taught to use the written word. It is obvious that these aims must determine and guide the methods we use in our teaching. The obstacles the Direct Methodists had to contend with have by no means vanished nowadays, but there is a much greater realisation of the need of foreign languages in Britain to-day and many more cogent reasons for immediate action in improving the teaching of them.

Much of this drive comes from the needs of those engaged in industry and commerce. For them too the value of languages means the ability to communicate. As far back as 1930 the Goodenough report (5) stated that "the knowledge and use of foreign languages will determine to some extent the future measure of British overseas trade and prosperity". "The learning of the spoken languages is of immediate concern from the point of view of progressive business men and for the country as a whole."

This plea for more emphasis on the spoken word was taken up again in the Carr Saunders Report 1949 (6) and in the McMeeking Report 1959 (7). It is only recently, however, since the publication of the Weir (8), Hayter (9), and F.B.I. (10) reports that a more realistic policy in the teaching of modern languages, including more adequate training in the use of the spoken word, has been adopted in some places. This is due, no doubt, to the hope held in 1962 that Britain would join the Common Market—a hope which gave a decided fillip to our teaching. It is due also perhaps to the examples of our neighbours and in particular of the two great powers, the U.S.A.

and the USSR, where a knowledge of foreign languages is now required at an early age. Incidentally, awareness shown by governments of the value of modern language teaching and research is a comparatively new feature of our modern society.

It is clear that the aims of learning a foreign language to-day must stress communication and the ability to use the spoken language uninhibitedly. Account must be taken also of cultural patterns which include social behaviour and understanding of the conventions, all of which facilitate contact with foreign countries.

At present in England our aims are still too much conditioned by our external examination which have tended to perpetuate the kind of teaching given by the classics teachers and to ignore oral work. Plans are already afoot to reform our internal examinations and to remedy the lack of practice in the spoken language.

Scope

Not only have the aims of language teaching widened to-day but also its scope. No longer is French the prerogative of the grammar school (or public school) child. Since the Butler Act of 1944 modern languages have been taught in secondary modern schools and in further institutes of education. To-day the subject is being taught also in primary schools after a very successful experiment carried out in Leeds (11) in 1961, followed by other experiments elsewhere.

In September of this year the Ministry of Education is launching a Pilot Scheme in the teaching of French in Primary Schools, "to accumulate knowledge and experience as rapidly and systematically as possible" with a view to introducing a foreign language in primary schools as a national policy. Recently "Foreign Languages in Primary Education" was the subject of a conference held by Unesco in Hamburg 1962, a report (12) of which appeared in September 1963. "Although the conference was called to assess the present state of established and experimental practice and to identify fields of necessary further research, its members were bold enough to indicate at least tentatively, results of practical experience and physiological and psycho-educational research which seem to strengthen the argument for an early start."

Wider provision, too, of courses in a number of languages and by a variety of means, including radio, television and discs is made to-day for adults. This is in addition to language services offered by industry and commerce to their members of staff, and to the special intensive language courses provided in certain technical colleges for

industrialists at home and overseas. Before long use may be made also of teaching machines.

It is quite evident that more and more people in the future are likely to learn more foreign languages, if only to be able to participate fully in the life of the twentieth century. They will be helped in this by increased travel facilities, more foreign visits and exchanges, more foreign films and newspapers and more electronic aids.

It is to be hoped that this wider spread of languages will result in better international understanding and the removal of national barriers.

Content

If we consider the content of modern language teaching to-day there are here also signs of change which are indicative of more radical changes likely to take place in the years to come. One of the main factors of change here is the new role of linguistics in the study of languages and even more, perhaps, in the production of teaching materials. Linguistics is of course no new science. It has been, however, the subject of much research in recent years particularly in America.

Through linguistics we acquire a new view of language. "The study of linguistics teaches us what is significant in language, what is superfluous, what is indispensable and what are the expected difficulties in the learning process. It does so with the aid of an objective analysis of both the native and the foreign language and by comparing the two" (13).

A knowledge, therefore, of linguistics is valuable in giving a systematic description of a language as it is spoken and written, including intonation, rhythm and stress. This helps the teacher in the preparation of tapes and other teaching materials. It is very useful, too, in the construction of tests to measure the various linguistic skills. It is even more important in the design of syllabuses and text-books. "The day of the amateur text-book writer is over or it should be. . . . There is no excuse for publishing teaching materials written by people with no understanding of what is involved" (14).

The possibilities of the new teaching materials are demonstrated in such scientifically constructed audio-visual courses (as "Voix et Images" and "Bonjour Line") and audio-lingual courses (like A-LM (15) and "Ecouter et Parler") (16). The former consist of film strips used in conjuction with tape recordings, which are based on the limited vocabulary and constructions of "Le Français Fondamental"

and are the result of much research by the C.R.E.D.I.F. team at St. Cloud (17). The latter are produced in America and consist of tape recordings in French or discs unaccompanied by film strips but with an introduction to each unit in English which gives a contextual rather than a literal translation. It must be explained that many of the modern teaching materials are in the form of tapes or discs accompanied, perhaps, by pupils' books, teachers' guides or working scripts.

Following on from these teaching materials an increased use of reading texts is required to consolidate what has been acquired orally and to encourage the pupil to read more. A number of such readers in French is already on the market. At a higher level, perhaps, pupils (particularly the non-specialists) will be encouraged, it is hoped, to use the foreign language as a tool to read about their own interests. This extensive reading is not uncommon on the Continent where modern books are read and discussed in the foreign language. As for the specialist, it seems probable that his reading will be directed more and more towards the present century and to the use of the contemporary idiom although doubtless a knowledge of the main classical texts will be required in addition.

The content of modern language teaching is also being extended by the widening choice of languages studied to-day. The case for Russian has been made in the Annan report. "We cannot afford to allow what has become a grotesque disequilibrium in the teaching of languages to continue in our schools" (18). More efficient means of extending the study of languages for practical purposes later are called for. The recommendations of the Hayter report call for more research in Oriental and Slavonic languages and the Weir, McMeeking and F.B.I. reports analyse the relative positions that various European languages ought to occupy in the school curriculum in the light of their relative importance to this country. Thus the content of language teaching has become wider and more varied and reflects the many changes, social, political and technological of the last few years.

And what of the Methods?

It is, of course, well known to all of us that teachers in England have not been required to obey directions of any kind. As Mr H. F. Collins said some thirty years ago: "Modern Languages is the happy hunting ground of every experimenter, faddist or even charlatan" (19). Even at the present time there are many who minimise the difficulties

of teaching French and decry the need for special training or residence abroad as essential qualifications for a teacher of languages. Where but in England is the language policy so haphazard that the choice of language, the planning of the course, and the decision to start or discontinue the language in question are entrusted very often to the individual teacher? Up till now little thought has been given as to whether two languages should be introduced at the same time—or whether they should be introduced at an early stage. We lack the systematic and reasoned planning of language study that one can find abroad as in Germany or in the USSR to mention only two examples (20). In the latter "the teaching of a language is conceived as a scientific or technological operation; it is planned accordingly and the actual training or instruction is carried out with almost clinical objectivity".

At present the average teacher's methods are determined too often by the nature of the external examination, as we have already mentioned. This examination, which was originally a marking device, has become a teaching instrument stressing, as in the teaching of dead languages, translation both from and into the foreign language and grammar, with little or no weight given to oral work. Here, too, however, there are some reassuring signs of change. In the first place the Associated Examining Board is now omitting translation into the foreign language at O level and allotting a large proportion of the marks to the oral test. Secondly, in the examination leading to the Certificate of Secondary Education which is being organised and conducted by teachers, stress is also being laid on the oral test, and thirdly the Modern Language Association, financed by the Nuffield Foundation, is trying out a Pilot Scheme for a new form of examination in modern languages which will give a more realistic assessment of the pupils' linguistic capacities.

It is obvious that modern methods need to be scientific as well as systematic in keeping with the age in which we live and this trend is clearly discernible. For example more account is taken to-day of motivation in the teaching of a foreign language. The value of a clearly defined goal is realised and teaching then becomes interesting and purposeful. The starting point in many of the courses, particularly the audio-visual courses, is a situation closely related to the everyday life of the pupil whose active participation in it is encouraged. As language learning depends as much on the environment as on the situation it must be considered as an integrated and meaningful whole. This is the essence of the structuro-global method of Professor

Guberina and the C.R.E.D.I.F. team of researchers, and is a principle which cannot be too often emphasised in language teaching.

Account is also taken of the stage of maturity reached by the learner so that the right teaching can be given at the right moment. In this connexion it is important to mention again the teaching of French to children of eight to ten years old when one can exploit the language learning gifts of young children who are "responsive to the demands of oral teaching and to imitative, non-analytical and situational techniques" (21).

The criteria for successful language teaching which we have just mentioned, are, of course, not new. Nor indeed are the principles underlying the so-called "new" methods. As far back as 1917, H. E. Palmer (22), in his writings, had emphasised the importance of motivation, maturation and integration and had outlined the various stages of language learning. For him the primacy of speech was obvious. Learning a foreign language meant learning a new sound system through systematic listening and ear-training. This was followed by learning the basic structures unconsciously and then consciously without the intervention of the printed word. It was carried out largely through substitution tables (or pattern practice) and involved much repetition and imitation. When the stage was reached at which the pupil could use the structures automatically, he was able to proceed by analogy as he does in learning the mother tongue. Naturally progress from that time onwards was much more rapid.

This was the basis of the intensive language course of the Army Special Training Programme during World War II and of the C.R.E.D.I.F. audio-visual courses already mentioned. "Plus ça change, plus c'est la même chose."

What of the other features of the modern approach? One is struck immediately by the part played in language teaching to-day by electronic aids such as the tape recorder and the language laboratory. We have already mentioned the importance of the former in connection with audio-visual courses. Through it the foreign atmosphere is brought right into the classroom and the voices reproduced are those of native speakers speaking at normal speed and with normal intonation, thereby providing a consistent model of speech for the pupils.

The language laboratory is, as yet, a less familar sight in a school but its use, too, will become widespread before very long. It enables pupils to listen regularly to foreign speech and to practise speech

production in privacy, working individually at their own pace, or collectively under the supervision of the master. The latter can be freed from the presentation of much of the repetitive drill to devote more individual attention to pupils requiring his help. The effectiveness of the language laboratory, however, depends as much on the provision of suitable teaching materials as on the skill and ingenuity of the teacher using it.

In this connexion it is salutary for us to read the recent report (23) of a survey made in New York by a research fellow of Teachers' College, Columbia University, which states: "The claims for instructional effectiveness of language laboratories remain almost entirely unsubstantiated by any empirical studies carried out in the public high school setting, precisely the place where the laboratory is presently finding such great application. Better results in certain important skills are being achieved in instructional situations which do not use the language laboratory." The Director of Foreign Languages in New York Schools, in defence of language laboratories, states that any shortcomings there are due to the lack of training on the part of the teachers using the equipment.

A second feature of the modern approach is the focusing of attention on the use of the foreign tongue itself and on such exercises as require practice in it, both oral and written. From the earliest stages encouragement is given to the accurate reproduction of intonation stress and rhythm, which is made easier by the new electronic aids.

It is obvious that, in such circumstances, less use is made in the classroom of the mother tongue, and translation is here unnecessary. The latter is, after all, an exercise for a mature student. There are many who doubt the wisdom of teaching a language in terms of the mother tongue and who would favour the adoption of a co-ordinate system of languages in which the mother tongue and the foreign tongue have equal status but are separate as in the C.R.E.D.I.F. courses. The ability to think in the foreign language and the power to communicate adequately in it, even if at first only in very restricted situations, give the pupil a real sense of achievement.

A third feature of modern methods is to be seen in the treatment of grammar. The interest formerly taken in grammar is now transferred to the structure of language. In the early stages of learning a language by audio-visual or audio-lingual courses, grammar is replaced by drills of different kinds including substitution, mutation and increment drills. The structures are learned in a variety of forms which the pupil is able to use automatically and without hesitation.

A conscious intellectual knowledge of the material is not required at this stage. When, however, the pupil is master of the essential structures or speech patterns, the grammatical rules appear then as generalisations of what the pupil has already acquired through habit. Formal grammar like translation is an exercise for the more advanced pupil.

Problems

Such changes in modern language teaching, as we have indicated, bring with them a number of problems still to be solved.

The problem of providing scientifically designed teaching materials to be used in conjunction with the new aids, particularly in languages other than French, has already been mentioned. Experiment and research are needed here. The Nuffield Foundation Project for the provision of teaching materials for an introductory course in French for children from eight to thirteen is a step in the right direction. Similar teaching materials in other languages will be offered later and made available for general use.

A second problem is concerned with the organisation of modern language classes once electronic aids are used. Consideration has to be given to the amount of time to be spent in the language laboratory, the size of the classes, the grouping of sets and the many other difficulties likely to crop up if the equipment is shared by two or more schools. Very careful planning and time-tabling will be necessary. In the schools of the future, more imaginatively designed buildings, too, will have to cater for the larger and smaller groups which will be involved in the new approach to language teaching. Flexibility, therefore, must be the keynote of both time-tabling and building design.

The main problem, however, is the recruitment and training of teachers to deal with the large number of pupils likely to learn foreign languages in the next few years, particularly in the lower age groups. If our aim is to enable the pupil to speak the language uninhibitedly as a means of communication, it is obvious that the teacher must be competent in the use of the spoken language, familiar with the day to day happenings in the foreign country as a result of residence abroad, and versed in the new techniques of language teaching with electronic aids. The efficiency of the teacher will depend, therefore, much more on his performance than on his academic qualifications. Special training is, of course, necessary and the Ministry of Education has already organised courses both at home and abroad for this pur-

pose. In addition, the Ministry of Education has held several very useful short courses on audio-visual aids in order to familiarise secondary school teachers with the new equipment.

For the graduate too, it is clear that professional training is essential and no doubt this will become obligatory for all teachers within the next few years. The training of graduates is at present undertaken in the University Departments of Education. The alternative scheme, namely in-service training in certain schools has, however, grave disadvantages. Teachers are already hard pressed and have no time to keep abreast of new developments and schools tend very often to be parochial in their outlook.

The respective roles of University Departments of Education and Training Colleges have not been defined and the meeting point for consultation and discussion must surely be the Schools of Education envisaged by the Robbins report. Very close co-operation will be needed to ensure smooth transitions from one type of school to another and from school to college or university. The Schools of Education could be also centres of research for co-ordinating work done in schools, training colleges and universities. Such research is not new in some of our present Institutes of Education.

In spite, therefore, of difficult problems, the future looks promising. Modern languages have attained a place of dignity and modern language study should now pass from the "confusion of thoughtless or interested opinionism into the more productive realm of scientific investigation" (24).

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ANXIETY AND SCHOOL EXAMINATIONS

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1. Introduction

It is generally believed that the anxiety a person experiences when taking an examination is an important element in his success or failure. The assumption is usually that if he is over-anxious he will be too confused to do his best; if he is not anxious at all he will maybe perform badly because he makes insufficient effort.

The hypothesis is credible. Few people who have taken examinations, whether to obtain a driving licence or a university degree, have failed to experience anxiety at least occasionally. It is accepted that there are people who rarely give of their best in an examination, and most teachers and others in academic life believe that this has sometimes been their personal misfortune. Many such failures are attributed to over-anxiety: some of the failures of our pupils are attributed to a morally reprehensible lack of anxiety.

Subjective impression, however, is insufficient to do more than set up hypotheses. Objective evidence is required to substantiate them, and until such evidence is provided the role of anxiety in learning and examination performance is open to question. It is hardly sufficient to assert that we each have an optimum level of anxiety, that one person will give of his best in conditions of low anxiety whilst another requires a highly anxious situation. This may indeed be the case, but until objective evidence is available it is merely a further hypothesis which in no way solves the problem.

2. General Anxiety, Intelligence and Attainment

A large number of researches have been concerned with the relationships between anxiety, intelligence and attainment. There are, of course, many forms of anxiety. Most work has been related to general anxiety defined in terms of the typical symptoms recognised by clinicians (e.g. 1). However, it has been shown that anxiety of this type is highly correlated with anxiety specifically related to tests and examinations (e.g. 2).

Davis developed a theory that children are taught to be anxious at a very early age by means of the conditioning provided by the social environments in which they live (e.g. 3, 4). Middle class parents, it was suggested, make their children more anxious in response to more stimuli than do working class parents, with the result that they have a stronger drive to get on in the world. Such anxiety, since it performs a useful purpose, was termed "adaptive, socialised anxiety". The implication is that greater anxiety of this type leads to greater success in examinations. Davis claimed to have substantiated his hypothesis by means of participant observation researches in the United States; that is, researches in which data was obtained by having an observer live as a member of the group to be studied.

The theory has implications concerning children in English secondary schools. Grammar school pupils, who are actually or potentially middle class and more able in examinations, should have a higher level of adaptive, socialised anxiety than secondary modern school pupils, who are mostly working class in origin and less able in examinations. A study by Bene of some 600 boys in ten secondary modern schools in the London area gave a measure of confirmation to these predictions (5). In the British Psychological Society's report on *Secondary School Selection* (6) it is assumed that the findings apply to other forms of anxiety also: that grammar school children are in general more anxious than secondary modern school children. The implication is that there is a positive correlation between anxiety and examination performance.

This view received further support from Lynn (7) after a study of 80 boys and girls in a junior school and 45 boys in a secondary modern school. He concluded that "anxiety enhances attainment" and, presumably, examination success.

Later work, however, has demonstrated that as far as concerns secondary school pupils, this conclusion is mistaken. In a study conducted in the Midlands, measures of anxiety comparable to those used by Bene and Lynn were obtained for some 900 secondary school boys and girls (8). The results showed without doubt that "general manifest anxiety" and "separation anxiety", when measured by questionnaires, have a high correlation, and are greater in secondary modern than in grammar school children. In other words, there is a small negative correlation between anxiety of this kind on the one hand, and academic ability and examination performance on the other. It is possible that this conclusion does not apply to adults the

socialised anxiety: a measure of anxiety similar to that used by Bene gave inconclusive results, but had low correlations with the other anxiety measures.

Numerous other researches confirm this finding of a low negative correlation between anxiety and intelligence or achievement (e.g. 2, 9, 10, 11, 12). The discrepancies of the work already referred to are probably due in the case of Bene to the different measure of anxiety used; and in the case of Lynn to the very small sample. More recent investigations into parent-child relationships have also cast doubt upon other aspects of Davis' theory (13).

Lynn claimed that there is a curvilinear relationship between anxiety and attainment in English and arithmetic. In the Midlands study mentioned above, eta coefficients were computed between anxiety measures and scores on both English and arithmetic attainment tests. No significant relationships were obtained. After perusal of some thirty researches involving personality measures, Warburton reaches a similar conclusion that curvilinearity is comparatively rare (14).

However, whilst we may now conclude that, amongst secondary school children, questionnaire anxiety is in general negatively related to examination performance, this appears to be not necessarily the case with students. Work with these subjects has sometimes yielded a small positive correlation between anxiety and performance (e.g. 15). As indicated by Vernon (16), this may be due to the small positive correlation between measures of anxiety and social introversion: students who are more introverted are known to perform better in examinations. However, the same consideration applies at the secondary school level: grammar school pupils are in general more socially introverted than secondary modern school pupils (8). There is evidence that, in junior schools, the child who is socially extraverted is more successful academically (17). It is apparent that the relationship at different ages between anxiety and social introversion on the one hand, and academic performance on the other, is not yet fully understood.

The more complex hypotheses regarding anxiety and performance which derive from behaviourist theory are also relevant to examination success. Spence (18, 19) and Taylor (1) have argued that anxiety is a drive which combines multiplicatively with habit to give response. In the case of simple habits where only one response is probable, anxiety assists learning; in the case of complex habits where several responses are possible, anxiety inhibits learning. School

learning and examination performance are complex habits, and we should therefore predict that they will be inhibited by anxiety. This prediction has been substantiated, as has already been noted (see also 20, 21). The results, however, permit other explanations: to generalise from simple conditioning experiments to the learning of school subjects, as the theory demands, is to take rather a large step without the support of further experimentation.

3. Test and Examination Anxiety

In view of the conclusion that there is, for secondary school pupils, a small negative correlation between general anxiety and academic performance, measures of test or examination anxiety would be expected to give a negative correlation with examination success. This has in fact been the finding in those studies from which significant results have been obtained. It has been found in the United States, for example, that test anxiety scales have a greater negative correlation with college entrance examinations than have general anxiety scales, and they make a useful contribution to the prediction of academic achievement (22).

Sarason (2) devised a Test Anxiety Scale for children which has yielded low but consistent negative correlations with intelligence and achievement. His conclusion is that anxiety concerned specifically with examinations has an interfering effect upon performance. The size of this negative correlation with achievement is higher for older children, who are subjected to more tests and examinations and may therefore be assumed to have more of this specific form of anxiety. Further, it is obtained in both group and individual administration and is consistently greater than the correlation of general anxiety and achievement, varying between $-\cdot2$ and $-\cdot3$ approximately. When English and American children were compared at junior school age, the English children had a lower level of general anxiety but a higher level of test anxiety. Their higher test anxiety was attributed to pressure of the 11+ examination. Such findings are adduced as evidence of the validity of the measure of test anxiety.

It could, of course, be objected that higher intelligence leads both to better performance and to lower anxiety. Sarason's reply is that the negative correlation is still obtained when all subjects are of superior intelligence; also that the size of the correlation is dependent upon the number of "cues" in the intelligence test which indicate to the subject that he is being assessed by authority figures.

The Test Anxiety Scale has been used in an attempt to assess the

stress caused by the 11+ examination (23). Two matched groups of junior boys and girls were selected from four schools in the Midlands, one group taking the 11+ examination for entry to grammar and secondary schools, the other taking no examination because they entered a comprehensive school. The Scale was given to all subjects just before the time of the 11+ examination, and again after the examination results were announced. The prediction was that anxiety would be higher in the examination group and that it would drop more in this group from first to second application of the Test Anxiety Scale. In fact, no significant difference was found between the mean scores of the two groups on either occasion. The difference in mean score between first and second application was obtained for each group, and the two differences were compared. Again, these were found to be not significantly different. In other words, the fact that a child was taking the 11+ examination had no effect, in general, upon his Test Anxiety score.

The result may indicate that the 11+ examination produces no significant increase in anxiety. Alternatively, it may indicate a defect of the Test Anxiety Scale. It is known that if this scale is administered twice to the same group of subjects, the mean score on the second application is lower, probably because the subjects tend to give a response which is more socially desirable in that it indicates lower anxiety. It was impossible to estimate the extent of this effect in each of the two groups of junior school children used in this investigation, and therefore impossible to obtain a true measure of change in degree of test anxiety within each group.

Experiments concerned with level of aspiration have frequently been designed to produce stress or anxiety in a group of subjects, by informing them that they have done badly in the first part of a test. However, the task has typically involved a fairly simple skill which cannot necessarily be compared with an intelligence test or an academic examination (e.g. 24). The same objections would apply to the experiment of Lazarus and Erikson (25) in which students working on a digit-symbol test were made anxious by telling them they had done badly.

A more relevant experiment was conducted by French (26) with pupils in sixteen high schools sitting a college entrance examination. The same students took comparable examinations under anxious and relaxed conditions, half the sample having the anxious conditions first, half having the relaxed conditions first. Two general anxiety questionnaires were given, one in forced-choice form to reduce the

effect of any tendency to give the socially desirable response. Biographical information was obtained, also particulars about feelings of anxiety and ill-health at the time of examination. Some four-fifths of subjects admitted anxiety about the "anxious" test; half of these said the anxiety was before, but not during, the test. Correlations between self-ratings of test anxiety and test score were negative but low (approximately $-\cdot 15$); between questionnaire anxiety and test score they were around zero. An index of over-achievement was obtained by comparing English grade with the grade predicted from an intelligence test, but was found to have no important relationship with anxiety. Further, when "validity" was defined in terms of the correlation between test result and actual school grade, it was found that the "anxious" test had no lower validity than the "relaxed" test. In other words, there was no evidence that anxiety reduced the validity of the examination. It has sometimes been found that highly anxious subjects do comparatively badly in a difficult test (e.g. 27); no such evidence was obtained by French. In effect, a carefully conducted research revealed no significant relationship between anxiety and examination performance, and it was concluded that further work was unlikely to demonstrate any such relationship.

4. Other Evidence

Most of the evidence which has been quoted concerning anxiety and its relation to examination performance is derived from the use of questionnaires. It may be objected that greater use should be made of the data collected by clinical psychologists, who constantly examine anxiety cases referred to them.

There are many difficulties to such a procedure. In order to reach a definitive conclusion it is necessary to have a large number of cases from a number of clinicians. The evidence from different clinicians is difficult to match. However, using the schedule suggested in the Underwood Report and with the generous co-operation of some 35 educational psychologists, data was recently collected at the Education Department in the University of Birmingham concerning some 600 children referred to child guidance clinics over a period of six months. There was among these not one case in which anxiety in connection with examinations was listed as a reason for referral, or even as a symptom. This is perhaps surprising in view of the general belief, supported by the evidence quoted above, that poor attainment tends to be associated with anxiety. It serves, however, to put the matter of school examination stress into some perspective:

it is not a primary cause of referral to clinics. When psychologists state that poor attainment is due to anxiety, they draw this conclusion from cases which have been referred to them because of poor attainment and the type of anxiety they have in mind is, predominantly, general anxiety.

To obtain evidence from teachers would also be difficult. Teachers' ratings of the personality traits of their pupils are notoriously unreliable. Further, it has been shown in a number of researches that they tend to lie along two dimensions, which may be typified respectively by "the good pupil" and "the socially extraverted pupil" (e.g. 28). The trait of "anxiety" tends to fall between the two dimensions, moving towards one or other according to the predilections of the teacher. Effectively, it is less easily and reliably rated than most other personality traits.

The evidence from questionnaires is admittedly open to bias because subjects tend to develop a response set and to give socially desirable responses. These effects have been reduced by framing the items in forced-choice form with two equally desirable responses to each item, and by having the questionnaires answered anonymously. The weight of evidence indicates that existing questionnaires, however imperfect, do give a rough measure of what is commonly accepted as "general" or "test" anxiety. Further, evidence from all sources indicates that any claims that anxiety enhances school examination performance are as lacking in substantiation as they are dangerous in their implications.

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THE CAMPUS SCHOOL

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ONE of the least known experiments in secondary education, but one which lately has been receiving more attention from several Local Education Authorities, is the Campus School or Secondary School Base. The first of these, begun at Bolton in 1952, with which the writer was actively associated during its first eight years, affords an interesting example of this theory in practice.

1. ORIGINS

There appear to be two distinct and independent sources of the theory.

The first was Howard Whitehouse (1). His experiences at Toynbee Hall and at the University Settlement at Ancoats, Manchester showed him the pitiful inadequacy of school provision in the squalor of slum conditions and led him to seek an alternative to the playground of the gutter. Between 1907 and 1941 he developed the idea of a School Base which would house elementary, secondary and adult education and which would provide green fields and trees as the setting for the child's social growth and educational development, where many things would be done and all the facilities shared "including gymnasia, libraries, swimming pools, lecture rooms, practical work rooms, concert rooms and theatres as well as facilities for games and physical activities of all kinds . . . the true cultural centre of the community, caring for the educational needs of all its members" (2).

The second source is to be attributed to W. H. Hayward, then C.E.O. of Bolton who, faced with the need to prepare the post-1944 Development Plan outlining proposals to meet the new demands of universal secondary education, independently proposed the idea of a School Base consisting of several secondary schools. He has said that, in part, the military connexion of the idea appealed to him in the sense of a concentration of educational forces and resources but that the chief attraction lay in the possibility of reconciling proven values of academic education in separate schools with the clear demands for equality of opportunity in education resulting from the

social revolution of the century. Whereas many in his situation were looking towards the Comprehensive theory at this time, he felt that some compromise between the claims of Tripartite and Common systems was both possible and desirable; this he found in the concept of the Secondary School Base which was accepted as the developmental pattern for the town in which six Bases were projected.

2. The Theory

This fundamental concept inevitably implied a theory which distinguishes between the academic and social functions of school and which openly acknowledges the view that disparity in intelligence demands separate academic opportunities and provision.

One site or Campus houses three co-educational schools; one selective, two non-selective. The large group of which these schools are constituent and equal members is considered to be one school in name, all its pupils wearing uniform of identical design and colour irrespective of their selective or non-selective designations. All pupils enjoy equal rights to share in the varied social, cultural and sporting facilities which the Base offers through its societies, teams, visits, journeys and other common activities. In such respects it appears to have some major characteristics of the comprehensive school yet it is clearly not because of important and deliberately planned differences (3).

The three constituent schools are separately housed, each having its headquarters in its own school block. Each has its own head and assistant staff, each being completely autonomous in so far as internal organisation, control, discipline, academic work and policy are concerned. In all these matters the schools are entirely independent of each other, each standing as a complete educational unit corresponding to the appropriate separate school of the Tripartite system and of similar size. By these means the problems of schoolmastering are brought within the compass of practical manageability and both staff and pupils enjoy the relatively more intimate atmosphere and smaller social context of a school of usual size. The three schools possess their own staffs for the teaching of specialist subjects, Art, Handicraft, Domestic Science, Science, Physical Education and work in these fields is done under the sole direction of the Head of the School concerned. Completing the Campus is an Assembly Block providing the halls, dining spaces, kitchens, House rooms and other facilities for the common use of a Base population of some 2,000 pupils.

The theory as such poses an interesting control problem at the top, largely because the concept of equal partnership of the three schools had some degree of novelty. The opinion of many people was that it would be extremely difficult, if not impossible, to find three Heads capable of exhibiting the consistent agreement which would be necessary if the system were to be workable. Yet to envisage the appointment of an overall Head would tend to reduce the other two to the status and role of Departmental Heads and the resulting situation would become much more that of the Comprehensive School. The theory initially met these objections by suggesting the position of a Vice-Chancellor, elected on a two year basis from among the Heads, though the function of this post was never made clear.

The control pattern for the extra-curricular life of the Base seemed an easier problem. Here it seemed feasible to place various aspects of the sporting, cultural and social life in the hands of committees or councils representative of the staffs and pupils of the schools, each guided and controlled by a Head of a school.

One of the most important features of the theory is the fact that selective pupils enter as a result of success in the Local Authority's selection process at the age of eleven. Thus the selective school is enabled to stand in its own right in comparison with other selective schools elsewhere, able to maintain the full academic range and to ensure that concentration of intellectual quality which assists in the extension of the best minds, two attributes which James claimed may be lacking in Grammar sides of Comprehensive schools (4). Also, the existence on the Campus of a strong selective school of some 600/700 pupils may provide an academic magnet to attract initially non-selective children towards a more academic education perhaps, for instance, making the establishing of extended courses in the non-selective schools of the Campus easier (5).

Since the theory allows such a large measure of independence to the constituent schools and, at the pupil level, depends entirely upon its social treatment and opportunities for unity, the problem of knitting together the members of different sides in face of the deliberate academic separation is one of vital importance. To some extent, of course, the joint activities of the School Base, the clubs and societies representing the overall group, would offer some opportunity for this but it would be too much to expect these alone to counterbalance the rigid academic division chiefly because such activities could not cater for all pupils or ensure that all pupils

participated. Hence, in this situation, more than usual importance is attached to the House system which cuts across the Schools, including within each House a complete cross-section of the Base population, both pupils and staff.

In this way then, the relationship of the three elements in the structure, the Base, the School and the House is built up. Though each school has its own societies and clubs, it loses its separate existence for social functions and becomes part of the large Base group which has its social, cultural and sporting life. Further, the schools contribute pupils, staff and facilities to the inner system of the Houses, each of which, again, provides a full range of extra-curricular opportunities. One might expect such a triplication of experience to be of immense value in the development of pupils and staff alike.

It will be noted that the Base only exists socially and the rank order of importance related to function can be expressed thus:

	Academic function	*Social function*
1.	School	Base
2.	House	House
3.	Base	School

—a perfect inversion.

3. The Practical Implementation

In the Secondary School Base at Bolton, which took the name Hayward Schools from its originator, there were two exceptions to the theory as described. Firstly, the idea of Vice-Chancellorship had been dropped as an unnecessary complication in the partnership. The Heads were to act as a triumvirate with the C.E.O. as final arbiter should occasion demand. In fact this system worked quite satisfactorily with appeals to the referee being rare indeed. The second exception was that a Bilateral school (Technical/Modern) was substituted for one of the non-selective schools. This was a temporary measure until such time as a second Base was established round a Technical school. The campus therefore housed three schools, Grammar, Technical/Modern, and Modern, both Grammar and Technical pupils being selective entry. An advance was also made in the development of the House pattern. Here, besides the facilities for social interaction presented by House dining, sports, games and

the like in extra-curricular activity, the six Houses were organised to present a further interaction opportunity within school hours.

At the time of the writer's association with the experiment the Houses took over the complete control and organisation of the Base for one afternoon each week. Each Housemaster split his house-population into voluntarily chosen work-groups and the whole House occupied half a school block under the control of the Housemaster and his assistants drawn from all three schools. This presented an interesting second-order organisational pattern. Whereas the Base was divided into three academically separate schools for most of the week, it was, on these occasions divided into six self-contained units in which there were no barriers erected between children of varying abilities. Indeed, in any work-group, selective and non-selective pupils were to be found working together on a topic of mutual interest led by a member of staff in a purposeful and systematic manner though conducted in a way less formal than that which might be found in the classroom on other days of the week. To some extent, then, these groups contributed to the academic development of the pupils though their main function remained one of providing the setting for social interaction and integration. It might be said that each House was a comprehensive group in which the fullest range of ability worked and lived together in school time. On the success of this much of the hope and effectiveness of the Base depended. The other extra-curricular activities of the Base were put in the hands of Councils representative of the three schools and each chaired by one of the Heads of schools.

4. Some Social Problems

One of the prime hopes of the experiment was that the Base would materially contribute towards the achievement of social tolerance amongst its 2,000 pupils. This is not perhaps the happiest of expressions since it implies intolerance and discrimination though, in fact, something of this was seen in the early stages. It is sociologically better to think in terms of an interplay of subcultures based on the wide variety of home backgrounds, intellectual and personal qualities, academic training and specific abilities, with benefit to all. The field for such interplay was enormous. Apart from the large number of possible face-to-face relationships existing for each pupil, the possible number of mutual pairings offered was in the region of two million and the total of possible relationships larger than mutual pairs ran into astronomical figures (6).

Out of this several sociological problems were indicated. Could the selective pupils with an assumed superiority of intellectual and, perhaps, cultural background, and often of personal qualities, give something of this superiority and richness to non-selective pupils? (7) Could friendships be made across the selection line which would be of mutual benefit? Would the close proximity of pupils exhibiting the widest range of all characteristics merely accentuate differences and increase social distance? What were the effects of sex and age on social interaction on the Base? Were the Houses functioning as integrators in the way and to the degree envisaged? Did parental occupation affect the degree of integration? Did success in the selection process enhance social acceptance? These were some of the questions posed by the situation.

In order to assess the extent of the influences working in these directions a sociometric survey (8) was carried out in 1957 using the voluntary work-groups of the Houses as the experimental situation because of the comprehensive nature of their populations and the relative informality of the work. A partial rank order sociometric question was given to a sample totalling 1,040 pupils on the criteria of work-partnerships and invitation home. A projection test was used in support and processing involved the use of chi-square, analysis of variance, tetrachoric, rank-order and score correlations. Because of the insertion of the Bilateral school in the Base the sample surveyed therefore gave two constituents of the selective side, Grammar and Technical, and two constituents of the non-selective side, Bilateral Moderns and Separate Moderns. These could also be considered as four distinct academic sides for the purposes of the investigation.

There were repeated indications throughout the initial stages of the survey that the rank order of status as indicated by preference was Grammar, Technical, Separate modern, Bilateral modern; suggesting that selective pupils were, in fact, playing a leading part in the interaction on the Base. It was later shown that this was a surface indication and was the result of strong self-preferences by each of the academic sides. It seemed that the planned separation of the schools on academic grounds was reflected in this aspect of group-selfpreference but that this had little to do with general esteem. For instance, pupils of the Grammar school markedly preferred to find associates in their own school and did not appear to earn greater esteem from other academic sides. Age did not seem to alter this. Similar indications were shown when success in the selection process

was correlated with higher-than-mean acceptability. Yet, one of the most interesting points shown by the projection test was that 80% of the ablest Moderns (A streams) preferred to find their friends in the selective sides, a proportion which fell to 56% for B streams and 27% for C streams. This link suggested an idea which was later to be validated, namely that the important preferences, those which cut across the sides and the schools, related to parental occupation or socio-economic background not to academic affiliation. This appeared to be paramount. An important result linked with this was that children of skilled and semi-skilled workers showed the highest self-preference ratio.

When the distribution of choices was analysed on the criterion of invitation home no pronounced relationship was seen between preference and proximity of domicile. The great majority of pupils made preferences at distances greater than 1½ miles. It seemed that the more important friendships were the result of in-school contact and, since the House activities gave the greatest opportunity for this, the function of Houses as vehicles of interaction and integration was, perhaps, being fulfilled.

This is, of course, only the briefest reference to the actual sociometric indications of the survey. On the whole the evidence of the investigation supported the idea of the Base as the chief agent influencing the associations between pupils of different sections of the community, with differences of home background, and personal qualities, through the opportunities for free interaction which it provides: firstly in such opportunities as travelling together, playtime, dining, and secondly through the voluntary association in House work-groups. Since this latter was the only controlled opportunity in the situation the importance of the House system, viewed in its wider terms, appeared to be emphasised. This was where the hopes lay, not in the academic area, so that the indications of strong academic self-preferences were not considered to be important. The real importance lay in the identification of strong near-socioeconomic self-preferences. This seemed to be constant for each and any group and was strongest for the skilled and semi-skilled group. One may assume that there would be marked differences in the values held by children of middle and working class parents (9). There also seems to be a relationship between values acceptable to a group and high acceptability. Hallworth (10) suggested that, as the integration of a group developed, as it became socially more cohesive, it appeared to form around recognisable values represented

by a nucleus of a well-chosen, highly preferred sub-group. This leads to the extremely important question as to whether, in the development of such a situation as this, the application of these self-preference differentials would lead to the dominance of one social class and of one set of values.

There would seem to be fewer problems of an academic nature associated with the Base concept because of the independence and separateness of the constituent schools. One of these already mentioned is the idea of selective pupils attracting non-selective pupils towards a more academically biased education through associations made on the Base. Perhaps this was bound to happen amongst children so closely associated as they were in House activities where Grammar, Technical and Modern pupils work side by side, though it is difficult to substantiate statistically. Within five years of the Base operating fully, between 15% and 20% of the Modern pupils were successfully undertaking G.C.E. courses each year. Those who wished to remain were then accommodated in the sixth form of the Grammar School for Advanced level.

This was an important feature. Every pupil entering the Modern sides could see the Grammar School sixth form as a possible and potential goal, as a daily and constant reminder of a second opportunity for educational advancement. He could also measure himself against pupils of selective sides but still be protected in his academic preparation by the separateness of his school.

All impressions received and opinions of pupils given, underlined the importance of this kind of structure which separated the academic development of differing abilities but which regarded all as of equal personal worth.

It is as an experiment in co-operative social education that the Campus theory should make its greatest contribution and in spite of all its inherent difficulties, only a few of which have been mentioned in this article, it appears to have much promise for the future. The development of the score or so of such institutions now existing in England will be watched with interest.

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RESEARCH NOTE

ATTITUDES TOWARDS SPECIALISATION AMONG SENIOR GRAMMAR SCHOOL PUPILS

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WITHIN an investigation into "Values and Interests of Senior Grammar School Pupils" items were included to investigate attitudes towards specialisation in further education and careers. Many such pupils will undertake some form of further education of highly specialised content but there is little evidence as to whether any potential students find it difficult to choose one career out of several possibilities or to renounce certain interests of equal importance in favour of another. The present investigation gives some indication that this necessity does not suit a minority.

The subjects were 173 boys aged 16-18 and 126 girls aged 15-18, the complete sixth forms of one co-educational and seven single sex grammar schools in the Home Counties during 1957.

Attitudes towards specialisation were dealt with by means of 8 pairs of antithetical statements, one statement representing a pro-specialisation attitude, the other favouring non-specialisation. The subjects were required to indicate which statement they agreed with the more. Some paired statements involved self-evaluation; others dealt with opinions about university courses and careers. The paired comparison form was in keeping with the questionnaire on Values, within which, without identification, were spread the 8 specialisation items. Though these were composed arbitrarily, there was a fair degree of consistency in the pupils' responses to them, pupils who preferred the pro-specialisation response in one pair tending to show the same preference in other pairs. The statements and proportions are appended. Chi-square was employed to test the significance of difference in proportions, boys' and girls' responses being treated separately.

RESULTS

(*a*) *Boys.* Pro-specialisation responses outnumbered non-specialisation responses in all 8 items; in 4 the differences were great and highly significant. Thus a large majority of boys supported the idea of specialised university study, evaluated themselves as specialists in terms of school subject, considered jobs to involve a highly specialised training, and were

certain which type of occupation they would like to follow. Thus a good number of boys seemed to fit the trend of specialised university study and of a career predominantly in one profession. However, sizeable minorities gave non-specialisation responses; 27% favoured broad university courses; 40% thought it best to try several kinds of job, and as many as 42% agreed it was a pity one had to specialise.

(*b*) *Girls*. Again pro-specialisation responses outnumbered the others in 6 out of 8 items, though in only 2 were the differences highly significant. Thus a majority of girls saw jobs as requiring specialised skills and knowledge, evaluated themselves as specialist in terms of school subject, and were certain which occupation they wanted to pursue. But again sizeable minorities indicated non-specialisation preferences; 42% favoured broad general university courses; 54% thought it best to try several kinds of work; 30% agreed it was a pity one had to specialise.

(*c*) *Sex differences*. The girls gave proportionately more non-specialisation responses in 5 out of 8 items. In 2 of these the differences were significant at the ·05 level. Thus significantly fewer girls supported the idea of highly specialised study at university and thought it best to stick to one kind of work. In the 3 items where the girls gave proportionately more pro-specialisation responses than the boys, the differences were not significant.

Discussion of Results

(1) The results suggest that the majority of sixth form pupils might have no difficulty in conforming with specialisation. Some of these pupils will have rather specialised abilities and interests which they can pursue in depth towards a specialised career. In many cases general motivational goals will contribute to conformity with specialisation. Some such motivation will be positive as demonstrated by the positive association, from data on the same subjects, between the values, Workmanship and Helpfulness and pro-specialisation responses. Where such motivations are high, specialising would seem to offer fullest scope for their expression. But some conformity will be associated with more negative motivations as demonstrated by the associations between the values Security, Support and Recognition and certain pro-specialisation responses. Some subjects may specialise because it is playing safest to do so when opportunities and status favour the specialists.

(2) A sizeable minority of pupils seemed to be against specialisation, particularly in regard to their preference for broad university courses and for trying several types of work during their careers. This minority must arouse our interest. While some will conform easily enough when the time comes for action and choice, some may maintain this opinion of regretting the need to specialise. Who are these pupils? In what way do they differ in general intelligence, specific abilities and interests from pupils with a more positive attitude towards specialisation? The present research data

TABLE I

Specialisation Items

The specialisation items are in order as they appeared in the Values Questionnaire, but here for the sake of clarity the "pro-specialisation" statement is given first in every case.

Item	*Boys* $N=173$	*Sex Diff.*	*Girls* $N=126$
A University should aim			
(*a*) to turn out people of good specialised knowledge	73% p. 001	p. 05	58% p. 05
(*b*) to give a broad general education	27%		42%
(*a*) There is one particular subject I do better than any other	79% p. 001	—	68% p. 001
(*b*) There is no particular subject I do better than any other	21%		32%
(*a*) I am quite certain which type of occupation I should like to follow	69% p. 001	—	60% p. 05
(*b*) I am not quite certain which type of occupation I should like to follow	31%		40%
(*a*) There is one particular occupation which I think I should especially enjoy	53% —	—	46% —
(*b*) There are several occupations which I think I should enjoy equally well	47%		54%
During my working life			
(*a*) it is best to stick to one kind of work	60% p. 01	p. 05	46% —
(*b*) it is best to try several kinds of work	40%		54%
(*a*) I feel there are only one or two particular jobs for which I would be suitable	58% p. 05	—	61% p. 01
(*b*) I feel there are quite a number of jobs for which I would be suitable	42%		39%
(*a*) Each job requires its own special skill and training	85% p. 001	—	92% p. 001
(*b*) If you can do one job well you can do several well	15%		8%
(*a*) I am in favour of specialisation, the specialist makes the greatest progress	58% p. 05	—	64% p. 01
(*b*) Though we have to specialise, it is a pity	42%		36%

could not answer this question, which remains to be adequately explored. In terms of general motivation the data demonstrated positive relationships between the values, New Experience, Freedom and Contact and non-specialisation responses. Those pupils with a drive for change and freedom and for close relationships with people tend to give non-specialisation responses.

(3) While the girls seem to think much like the boys, an even greater proportion preferred broad courses of study and would prefer to try several kinds of work. The increased emphasis in these directions can be explained partly by the fact that many girls still feel less need of highly specialised qualifications and full-time careers at work since most want to and will marry, and partly by the fact that their general motivation patterns as illustrated in the Values data tend to show a greater emphasis on such drives as the wish for New Experience and for Contact, i.e. close relationships with other people.

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BOOK NOTICES

DOUGLAS JOHNSON, *Guizot: Aspects of French History, 1787-1874* (London: Routledge and Kegan Paul; Toronto: University of Toronto Press, 1963, pp. x + 469, 60s.).

As the sub-title indicates, this book, an important book for the educationist as well as the historian, is not so much a biography of Guizot as a series of studies in French history during his long life—from two years before the Revolution to four years into the Third Republic. Guizot, François-Pierre-Guillaume Guizot, is, however, so much the central figure of each aspect studied—Political Thought, Education and Public Instruction, The Soult-Guizot Government, Guizot and 1848, Foreign Policy, History, Protestantism—and of the essential Introduction and Conclusion, that he emerges from the book as a living, complete and balanced person in a way that an exclusively biographical treatment could hardly have bettered.

It is with the book's significance for education that this notice is mainly concerned. In this connexion, it is especially significant for the educational historian. It revitalises and gives extended perspective to English knowledge of much of French education, inimitably and absorbingly. It is also significant, in the chapter entitled "History", for the educationist concerned with the approach to history teaching in schools, for whom the history of and nature of history is important. In addition, there is material of background significance for religious education in the chapter entitled "Protestantism".

The main direct contribution to the history of education is in the long, revealing chapter on "Education and Public Instruction", but there is much that has a bearing on this chapter elsewhere, for example in the treatment of political thought and the influences which moulded the outlook which conditions Guizot's approach, while Minister for Public Instruction, to his Education Law of 1833 and to the administration of the Law—the fact of his protestantism, the influence of Nîmes and of his Genevan education, his bourgeois aims. The chapter would be complete enough in itself, but it gains immeasurably when seen in the relevant contexts of the book as a whole, which include direct references to education elsewhere, notably to Villemain's secondary education bill, while Guizot was Prime Minister.

Outstanding features of the educational chapter—an example of educational history as it should be written, steeped in the social and political influences, subtle and overt, prevailing in the community, and born of a profound study that illuminates the writer's historical sense—include the insight given into the *Annales de l'Éducation*, into the university

world, and into the situation in the country as a whole and the countryside in particular as it affected primary education.

The chapter is a good example of the approach prevailing in the book. Guizot as an educational writer is seen in an educational world of surprising variety and interest. As a professor he is seen in the company of other brilliant lecturers in a university setting engrossingly described. As a reformer of primary education he is seen in a national setting examined with a fullness and perspicacity that extends our knowledge of the French system and gives rise to speculation about our own.

Where so much stimulates imagination about what might be found if Mr Johnson's leads were followed up—in much his own examination probably leaves little to be discovered—it is difficult to select what should be touched on here. The *Annales de l'Éducation* and the primary education field perhaps stand out, the first for what they have to offer in their pages, the second for the comparisons it evokes with developments in England and the understanding it contributes to the systems of both countries to-day.

Mr Johnson summarises the *Annales*, published by Guizot and Pauline de Meulan monthly from 1811 to 1814, under four main headings, the nature of childhood, how children should be taught, the teaching of religious and moral truths, and the way in which education could be organised in society, and he leaves us in no doubt of the need to read them. In an age of monitorial practice, though of Rousseauan influence, we are shown an essentially modern approach. We are told, for example, that Guizot discouraged dogmatism in educational matters and that children must be observed and studied in a scientific manner, children's differences indicating how they should be treated.

One of the main interests of this intensely interesting book is the light that it throws on social activities while France is involved in major national preoccupations. Moscow and Leipzig while the *Annales* are being published are cases in point, and the international nature of what, we learn, is published—articles on the educational system of the United States, stories by Maria Edgeworth, articles by Niemeyer, and much more. "Pestalozzi, Betty Gleim, Fellenberg, Campe, Kant, Elisabeth Hamilton, Bell and Lancaster are all discussed." There would appear to be a mine of material here awaiting further examination by the educational historian with an interest in comparative education.

With regard to primary education, Mr Johnson's treatment of the influences leading to Guizot's Law of 1833, the basis of the French system of primary education, and his exposition and discussion of the Law and its application are matters of first import in the institutional history of education. They give the subject a new proportion and expand and clarify it in a manner that is in marked contrast to the cursory treatments in other English writings on the history of education. It is here that we see the unities of the book particularly exemplified, and are reminded of the need to master the discussions on Guizot's political thought and religious out-

look in order to understand his aim in creating the primary educational system and the motives conditioning his administration of it. Did Roebuck and other English reformers appreciate that Guizot's motive was to maintain the existing bourgeois dominated class structure? Whether or no, far from giving France a lead over England in democratic education, Guizot was instrumental, as the book clearly shows, in fastening on France a system which England was fortunate to escape, as it left her in the long run freer to move away from the European parallel systems of elementary and secondary schools.

While French and English central administration were to go their separate ways, immediate local situations in France, which Mr Johnson engagingly illuminates, conditioned the operation of the law in ways which remind us of local influences in England. It is a coincidence that the latest of the Institute's monographs, Miss Ball's study of Her Majesty's Inspectorate in its first decade—noticed elsewhere in this issue of the *Educational Review*—takes us into local situations in England in a way which inevitably invites comparisons. In both countries forces of church, state and locality are competing and a comparison of the findings of Guizot's inspectors and those of Kay-Shuttleworth throws much light on the way the respective developments are to go and suggests that the advantage may well have rested with England.

In opening up the French system for us Mr Johnson has added to our means of assessing our own situations and has also opened up wider fields, for the more we read of the aspects which first interest us the more we feel the need of studying the book as a whole.

There is an invaluable bibliography, largely in the footnotes.

B. C. L. JAMES

G. H. BANTOCK, *Education in an Industrial Society* (Faber, 1963).

THIS book was written as a challenge to the minority group in education who are prepared to think—and think hard and deeply—about what is happening to our education. "There is too supine an acquiescence in the trend of events; . . . and indeed, the general level of educational discussion in this country is a national disgrace—it exists far too much in terms of means: fundamental questions concerning ends are sadly neglected."

The book starts with a sustained attack upon the views of John Dewey and holds him responsible for much that, to the author, seems to have gone wrong with schooling of recent years. "Dewey is essentially the philosopher of 'rootless', urban man; he is unable to see, as Arnold saw, that even the capacity to appreciate the extent and nature of social action depends on the quality of mind brought to the situation", or again, "his egalitarian leanings still represent powerful tendencies of the modern world as instanced in the comprehensive schools and the concern for social unity and the common culture".

This is no superficial attack upon Dewey, from whom there are well

over fifty quotations, which are critically examined in relation to the developments which have taken place in our industrial society, and are discussed against a wide background of other views. Instead of the false egalitarianism of Dewey the author asserts that "the equality we need is that which reverently accepts the essential nature and uniqueness of every human being; the hierarchy, one which recognises different levels of intelligence, consciousness and sensitivity and recruits itself on this basis. That this latter has been the cry, in an unresponsive world, from Plato's philosopher kings to D. H. Lawrence's 'priests of life' . . . and that our times are almost fantastically opposed to any such differentiation . . . in no way obviates the need to urge the finer morality in what, in education, is essentially and inescapably a moral situation."

The phrase "priests of life" is explained in parenthesis by another D. H. Lawrence quotation—"the first quality will be the soul-quality, the quality of being and the power for the directing of life itself" and this sentence gives the clue to much of the author's thinking.

There are some fifteen or sixteen further quotations from D. H. Lawrence with whose thinking the author finds himself in close accord, and the book is rich in pregnant passages taken from a wide range of other philosophical thinkers.

In view of the stress given to "values" and the sentence "what, indeed, I prefer to do is what I am doing in this book—proferring a number of particular value judgments concerning what I think desirable in education" it is surprising that there is no reference to any of the writings of Professor M. V. C. Jeffreys. Perhaps this is deliberate, since the antithesis between the Platonic and the Christian attitude towards society—and in particular towards the "workers"—is not touched upon in this book. Indeed, without unkindness, it might be said that this issue, and the related measurement of quality of life in Christian terms of devotion and self-sacrifice, is here either evaded or considered irrelevant.

An examination of the effects of universal literacy leads to the conclusion that "a diffusion of education, indeed, seems to have had, paradoxically, a deleterious effect on the highest cultural standards". The author is concerned (and which of us is not?) at the steady erosion of values and of standards in conduct by the forces of mass communication, ranging from the advertisement on the hoardings to the newspaper advertisements and the television within our homes.

He rejoices—as we all do—"that the Pilkington Report, with its very varied membership, in a social climate where 'responsibility' has come to be regarded as a dirty word, has dared to make a stand against deleterious and meretricious influences". And he believes that "there is sufficient evidence of expostulation against the vulgarised cultural order which the industrial bureaucratic state has spawned to make a contrary affirmation something more than merely quixotic". So he makes his very powerful and almost convincing affirmation.

What in effect he states is that there are, broadly speaking, two levels of consciousness in the children of our country—the intelligent, highly sensitive capable of absorbing all that is best from the grammar school curriculum and the "average", for whom a folk culture needs to be restored.

Education's finest fruit, he says, has been the ability not merely to exist at least one remove from current and actual social requirements but "the ability to enquire further . . . to specialise, in fact, untrammelled by vocational concerns, with due deference to the *nature* of the discipline involved—'for its own sake', as it were". And he goes on to affirm "it is not too much to say that the future of our civilization depends on a comparatively few people who pursue the established disciplines in this way".

He is, therefore, anxious that this form of education shall be retained for all that can benefit from it. But he deplores the attempt, under egalitarian or any other banner, to offer this pabulum, in diluted form, to those who, in all honesty, cannot metabolise it. So he wants, for the average, and for the below average, to provide an education deliberately "affective", i.e. for the emotions—but aimed also at developing habits and tastes which will be utilised in the increasing leisure which will come to those whose work becomes more and more a matter of machine-minding. And he outlines the sort of curriculum that such pupils would have, and stresses how the youngsters must be trained, despite their relatively low level of consciousness, to resist the falsity of values put over by the mass media.

"The school cannot, of course, provide a new morality," he says.

Yet that is precisely what has been done, within certain limits, in the USSR. But only by simultaneously controlling those forces which Christians of the nineteenth century would not have hesitated to condemn and classify as evil and which know too cleverly *how* to appeal to the lower levels of consciousness of all of us.

With fascinating large-scale experiments of the Russian pattern going on in the different countries beyond the iron curtain, we should seek every opportunity of studying what is being achieved—or not achieved—in the end-product of the communist process of education cum control of mass media before we commit ourselves wholly to Mr Bantock's guidance. And we must do this particularly because, in his last pages, he says, "we face a situation in which the Christian story regrettably makes little or no sense to the bulk of our population. We live, indeed, amidst the dying embers of a Christian morality. . . ."

Unfortunately, one feels that in Mr Bantock's division of the world, most, if not all, of the twelve apostles would have been given his education for the average "in a mode the folk can be expected to understand". For they would not have been numbered by Mr Bantock among the comparatively few who could have pursued an established discipline "for its own sake" and upon whom "the future of our civilisation depends".

C. H. DOBINSON

C. H. DOBINSON, *Schooling 1963-1970* (1963, 15s.).

IT might seem a piece of curiously unfortunate timing that a book with this title should have gone to press on the eve of the publication of the Robbins and Newsome reports. The fact is that Professor Dobinson has no confidence in advisory committees as a means of shaping educational policy and in his most trenchant chapter he exposes with nice touches of irony and indignation some of the follies of Spens, Norwood and Crowther. This is not, however, a backward-looking jeremiad. His starting point, in Godwin's words, is the belief that "the true object of education, like that of every other moral process, is the generation of happiness" coupled with a conviction that educational planning is inseparable from the planning of the whole social environment. His picture of the inadequacies of our present provision and the needs of the immediate future leaves no room for complacency. "I am not concerned", he writes, "with far fetched policies which cannot be implemented within twenty years, but with doing something now . . .", and again, "cool detachment becomes difficult when the short-comings of one's own nation—or its successive governments—are visited upon the young". This combination of urgency and practical suggestion informs the whole book which ranges in its 175 pages from the first months of infancy to "Adults and Life Long Education", the title of the final chapter. Between hard covers and at somewhat greater length (and six times the price) his scope and intention are similar to John Vaizey's in *Education for Tomorrow* published a year earlier.

One of the great virtues of Professor Dobinson as a guide to a complex of problems and current thinking about possible solutions is his extensive knowledge of education in France, Germany, Russia, the U.S.A. and particularly the Scandinavian countries where, apparently, they invariably manage things better than we do. This strength is also a weakness of the book: the accumulation of unfavourable comparisons with our neighbours is irritatingly unjust, and to devote seven pages out of a chapter of twelve on "Civilization, Education and the Family" to French legislation, or the whole section on "Individual Development" in the junior school to Norwegian practices is disproportionate.

The book contains some useful and illuminating quotations and figures and Professor Dobinson's facts are sometimes memorably shocking; the D.S.I.R., for instance, spends more on research into glue or nylon stockings than the Government does on educational research. Indeed many of the problems he discusses can only be solved by more research where we are ignorant and all of them involve, directly or indirectly, enormously increased expenditure. The only clue he offers as to where the money can be found is the remark that, "if we as a nation are wise enough to reduce our expenditure on so-called 'defence' we can vastly improve the happiness of our people".

Professor Dobinson favours the Leicestershire scheme, village colleges, compulsory day release, community colleges, summer schools on the

American pattern, visits to sewage farms (mentioned twice) and "The wisdom of Nature". He is also partial to quotations from the Mosaic code, the Decalogue, Hansard, *The Times* and Emil. Among his dislikes are nursery schools, broiler fowls, G.C.E., commercial television, Moray House, supermarkets and glamorised Science books for youngsters whom he is apt to call "the little ones". He describes with enthusiasm experiments in team teaching and the Dalton plan (without using these names for them) and perhaps his most useful pages are devoted to immediately practical suggestions for greater flexibility in time-tabling and class size, for increased private study and more economical use of the rarest and ablest teachers, for greater use of school premises in the evenings and school holidays and more co-operation between neighbouring schools. If some headmaster is inspired to experiment along these lines the book will have served a useful purpose.

M. K. PAFFARD

JOHN VAIZEY, *The Control of Education* (Faber, 1963, pp. 263, 30s.).

THIS collection of essays and addresses (with dates and occasions tantalisingly undisclosed) is, in a sense, a sequel to the author's *Economics of Education*. In the latter, Vaizey confronted us with some fundamental principles and problems; he now puts forward some suggestions—even blueprints—for action. In the present work the writing is better, and the argument more mature and eloquent—yet, somehow, one *learns* less from it. This may be because it repeats many points made in the earlier work (it frequently sins by internal repetition, too); or the trouble may be that, although it has a thematic unity, it is addressed to several different types of readers, among whom many educationists and "intelligent laymen" will, for lack of a training in economics, find parts of it difficult. It is, moreover, a pity, that little attempt was made to bring up to date some of the items, whether with regard to facts and figures or to educational thinking and research (e.g. Berdahl's work on *British Universities and the State*, published in 1959, seems highly relevant to Ch. 7).

Of the thirteen pieces, the two longest ones discuss "Education and Economic Development", with special reference to underdeveloped countries, and the value and difficulties of educational planning (with its frequent clash of immediate and long-term objectives), as illustrated by Vaizey's own past efforts in "Forecasts and Projections". The two most illuminating essays are, perhaps, those on the significance of block grants, and on the financing of higher education in Britain; and the two least satisfactory ones deal with the salaries and status of teachers.

Vaizey is a persuasive forerunner of what may well become the dominant figure in our mass society: the social engineer. If his plea for efficiency in education is timely in so far as it has been neglected, he yet oversimplifies the issue by maintaining that: "Education is an industry like any other." Elsewhere he notes the argument that in an overdetermined

search for efficiency: "the essential spirit of education will be lost", and tries to reconcile the two views by adding: "it could be argued that it is in the most effective and efficient schools that the spirit is most alive". Altogether his is a passionate plea for an educational system that will be efficient *and* just; and because, in addition to his superabundance of ideas, the majority of his arguments have "visible means of support", his book generates no less light than heat.

R. SZRETER

S. CLEMENTS, J. DIXON and L. STRATTA, *Reflections*, An English course for students aged 14-18 (O.U.P., 1963, 7s. 6d.). Teachers' Book 2s. 6d.
N. C. DEXTER, and E. G. RAYNER, *Liberal Studies : an outline course*, Vol. I (Pergamon Press, 1964).

Reflections is a book evolved by three teachers at the Walworth Comprehensive School, growing out of their work there. It is one of the most significant English text-books to be published for many years.

English text-books are customarily collections of exercises, and this description applies in more or less degree whether they are good or bad. It will point the difference between *Reflections* and these others if one says that it is not a collection of exercises; rather is it a bundle of experiences. The authors recognise that it is from experience and from involvement in experience that children grow and create, and so the materials in the book are given under the general headings "Family, Community and Work", "The Mass Media", and "Questions of our Time", and there are sub-divisions (in the last case including such subjects as the causes of crime, world poverty, the East-West gap, etc.). Themes are presented by extracts from literature and sociological writings and by photographs. Each theme provides many opportunities for discussion, thinking and writing: there are some few exercises on technical points, but the authors believe, quite rightly, that the children are more likely to learn "the technical points of punctuation and usage when given an interesting 'exercise' which encourages a creative use of language and which limits the technical demands to one or two specific points".

There is an indispensable teachers' booklet from which one might learn more about English teaching than from many full scale works.

An introduction by A. D. C. Peterson places *Liberal Studies* in the context of the present interest in general education in the sixth form. Topics included are such as education, pacificism, the classics, patriotism, science and Christianity, truth and the nature of reality, and each chapter consists of a general essay (though one is a dialogue in the Lowes Dickenson manner) followed by short extracts from relevant literature. The essays are scholarly and well-written and some of the extracts very stimulating. The sixth former and his teacher will find this a useful book.

Nevertheless one feels it might have been even more useful. Take the

chapter on Education for instance. This contains a brisk trot through the history of educational ideas in company with Curtis and Boultwood. Inevitably this is unsatisfying: one would feel happier if the section of extracts had been extended (bigger extracts, fewer of them), their subject been defined more closely, and general commentary been confined to merely introducing them. Such a pattern would have avoided the danger which lies in only reading *about* other men's thoughts. It would also have given fuller materials upon which to base discussion. The essay by one of the editors on "What is the use of the classics?" for instance, makes no reference to very pertinent psychological arguments on the matter, and also finishes up with some rather surprising claims; the extracts which follow do not provide a sufficiently effective basis for intelligent disagreement.

ANDREW WILKINSON

GUY HUNTER, *Education for a Developing Region, a study in East Africa*, sponsored by Political and Economic Planning and the Institute of Race Relations (George Allen and Unwin Ltd., 1963, 20s.).

To all who are concerned with the training of manpower for newly developing nations this study will be of great interest and value. Its primary purpose is to examine the needs and motives which bring students overseas. This entails an examination of training facilities available in the students' own countries and of the gaps which call for supplementation by oversea training. For this purpose East Africa is taken as a sample area. In the first part of his book, Mr Hunter gives a concise account of the secondary school system and of the rapid build up of training schemes in recent years under the pressure of approaching independence. This is based on the most recent information available from a variety of sources, supplemented by personal visits to schools and training institutions, which involved over three thousand miles of travel by car.

The second part of the book examines the state's need for oversea training and also the personal wishes and ambitions which impel students to seek places overseas. At present the public need must predominate and most governments are now strictly controlling the flow of their students overseas and the allocation of training places. Inevitable as this is just now—and welcome to a degree as Mr Hunter notes in his interesting and comprehensive review of scholarship programmes and problems—there are disquieting implications. He observes that it will not be possible to hold men indefinitely in jobs, however great their national importance, in which pay and prospects compare too badly with other opportunities and so manpower policy must be accompanied by a salary and career policy. This is only one of many wider issues of policy to which Mr Hunter refers with the brevity of masterly control. Many of the problems are the same the world over—preservation of educational standards in a given local situation, separate sixth forms, need for experiments with new types of

"college" education to meet the requirements of the less academic—but they stick out in sharper relief in developing countries. The threat of control by a meritocracy becomes more ominous when little more than half the potential school age population are in primary school and less than 10% of these have the opportunity to enter a secondary school. The danger of two conflicting nations within the state has more point when senior civil servants (on £2,500 p.a.) draw twenty-five times the labourer's wage and admission to a secondary school brings vastly enhanced financial prospects opening the way to "modern" living on Western standards. The teachers' despair over the emphasis on examination results must be the more acute when the difference between a pass in school certificate in the first, second or third grades may well lead to differences in starting salary of £1,000, £500-700 and £300 respectively. We, in this country, are agitated by our teacher shortage but in 1961-2 the total number of graduate African teachers in Tanganyika was fifteen. Africanisation of the civil services plus relatively unattractive terms of service for teachers have robbed the schools of most of the better qualified staff.

Mr Hunter's study is the first part of a larger research project undertaken by P.E.P., one of whose objects is to examine the problem of increasing the flow of British teachers overseas. Mr Hunter emphasises that despite the understandable urge to Africanisation the need for expatriates will continue in some technical posts and particularly in teaching. Between 1961 and 1964 East Africa needs 1,450 graduate teachers and has no hope of achieving the target from its own resources. Our key contribution will, therefore, be teachers, particularly scientists and staff for technical institutions.

The other object of the project is to examine the courses taken by oversea students (mainly Africans) and the degree to which they meet their aspirations and needs. Mr Hunter concludes that the present demand from East Africa for oversea places represents a peak load which he estimates will settle to between 4,000 and 4,500. Britain should have no difficulty in taking half. Most of them will be either adults on up-grading courses, or School Certificate boys who will want to take G.C.E. (A) and special technical training. (Those requiring a more academic course will go to American colleges and the University of East Africa will take most of those requiring a degree course post—H.S.C.) The main British problem of looking after oversea students will, therefore, be in the technical colleges. The number of post-graduate research students will rise—eventually students coming overseas should be mainly in this category—but they should have fewer problems.

This preliminary study which so expertly and concisely sets the particular study within the context of wider policy issues whets our appetite for the companion volume describing the problems of East African students in Great Britain which is promised for publication in 1964.

S. H. CLAGUE-SMITH

EDUCATIONAL PRODUCTIONS LTD., Filmstrips, *The Sword in the Stone, Macbeth, Twelfth Night, Nests and Eggs of British Birds, The Southern Uplands of Scotland, Progress in Design* (30s. each).

THESE filmstrips in colour represent a very high standard of technical production. The usefulness of the strips upon birds eggs, the Southern Uplands, and progress in design, is immediately apparent; and these are excellent, the pictures apt, conveying something which could not otherwise be conveyed. The filmstrips on literature are less obviously necessary; by the nature of things money for mechanical aids would be best spent first on a good recording of a Shakespeare play: then if one wished to convey something of the atmosphere through visual means one might examine these filmstrips. One would certainly choose the *Macbeth* rather than the *Twelfth Night*; the former, based on the British Lion film, and using a variety of shots from close-ups to distance, gives a real feeling of the play; the latter, based on an open-air theatre production, has far too many middle distances group shots, and, the atmosphere created by the performance absent, gives an unfortunate impression of characters standing about in fancy dress in a park. *The Sword and the Stone* is Disney at his worst; its one imaginative sequence, the fight of Merlin and the witch, the filmstrip omits completely; for the rest it is Disney whimsey, though doubtless a good teacher could make use of it.

ANDREW WILKINSON

PUBLICATIONS

The book referred to in Mr B. C. L. James's review is by Nancy Ball, *Her Majesty's Inspectorate 1839-1849*, a record of one of the most formative phases in the development of our educational system and of the way in which the system works. It is published by Oliver and Boyd for the Birmingham Institute, price 24s., as a monograph.

Other monographs obtainable from the University Education Department include:

G. E. R. Burroughs, *A Study of the Vocabulary of Young Children*, 6s.
W. E. Flood, *The Problem of Vocabulary in the popularisation of Science*, 6s.
L. G. Saad and W. O. Storer, *Understanding Mathematics*, 15s.
J. E. Collins, *The effects of Remedial Education*, 15s.
T. W. G. Miller, *Values in the Comprehensive Schools*, 12s.

There is also Educational Review Occasional Publications No 1

G. O. M. Leith, E. A. Peel, W. Curr, *A Handbook of Programmed Learning*, 5s.

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